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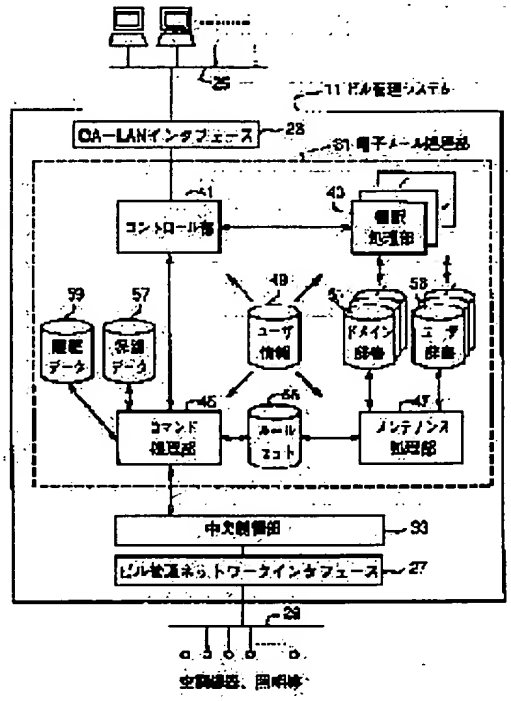
(54) BUILDING MANAGEMENT SYSTEM PROVIDED WITH INTERFACE WITH ELECTRONIC MAIL

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a building management system capable of executing the operation control of equipment such as air conditioners and illuminations and processing request for check or the like of information such as set value and temperatures through electronic mails without requiring an operator.

SOLUTION: The building management system having a central control part 33 for executing prescribed processing related to building management such as operation control of equipment arranged in a building, the setting of an operation schedule and the collection of prescribed information for the equipments through a building managing network is provided with an electronic mail processing part 31 for receiving a user's processing request from an electronic mail through an office network and outputting an instruction for controlling the execution of processing based on the processing request to the control part 33.



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* NOTICES *

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TECHNICAL FIELD

[The technical field to which invention belongs] this invention is a building-management system which performs control of devices, such as air-conditioning in a building, and lighting, condition monitoring, etc., and a user is especially related with the building-management system which can perform remote operation of these devices, and informational collection through an electronic mail system.

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PRIOR ART

[Description of the Prior Art] In the building-management system which performs control and the surveillance of devices, such as an air conditioner in a building, and lighting, control and the surveillance of these devices are intensively performed through a network at a central surveillance room. Generally, when the resident (a "user" is called hereafter.) of a building demands change of schedules, such as extension of the air-conditioning operation time of a building, the check of setting temperature, deactivation, etc., it is necessary to use and connect a telephone, FAX, etc. to this central surveillance room. The operator of a central surveillance room operates a building-management system based on the connection, and performs demanded processing. Moreover, a user acquires these information by connecting with a central surveillance room by telephone etc. similarly to check the temperature set up now, the operation schedule of a device, etc. These work had become the burden of an operator in order that it might perform setting change operation and check operation whenever the operator of a central surveillance room has the connection from a user, and it might connect them to a user.
[0003] Using a multi-function telephone, PBX (private branch exchange), or the user terminal of exclusive use as a method for mitigating the burden of such an operator, a resident accesses a building-management system directly and there is the method of checking [schedule / the input of operation change, the set point,].

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]However, by the method using the hardware of such exclusive use, there is a trouble that the hardware of exclusive use and the software of exclusive use must be installed separately. Moreover, there is a problem that a user has to understand the operating instruction of exclusive hardware. Furthermore, when a conflicting requirement is inputted from two or more users, it cannot respond automatically but the operator of a central surveillance room needs to correspond.
[0005] this invention has the place which it is made that the above-mentioned problem should be solved and is made into the purpose in offering the building-management system which can perform the processing demand of an information check of the operation control of devices, such as an air conditioner and lighting, the set point, temperature, etc., etc. by the E-mail, without minding an operator.

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EFFECT OF THE INVENTION

[Effect of the Invention] In the 1st building-management system concerning this invention, a user can demand the operation control of the device in a building, a setup of a schedule, etc. from a building-management system by the E-mail.
[0077] In the 1st building-management system of desirable composition, in order to control the output method to a CC means by the predetermined rule according to intermediate language, when the processing demand to which plurality is contradictory is made, check work is made if needed automatically and judgment of the execution/halt of processing to a demand can be determined.
[0078] In the 1st building-management system of desirable composition, since it has a dictionary means, the conversion or its reverse conversion to intermediate language from natural language can be performed.
[0079] In the 1st building-management system of desirable composition, conversion to intermediate language can be performed also in the case of the E-mail described by different language by setting up a dictionary means for every language.
[0080] In the 1st building-management system of desirable composition, the dictionary means is set up for every predetermined field in a building, and since the dictionary means of a predetermined field according to a user's affiliation field is chosen, the device of the range by which a user resides is chosen automatically. Thereby, it can prevent controlling the device of the habitation range of other users accidentally.
[0081] In the 1st building-management system of desirable composition, since a translation processing means has a learning function, in subsequent transform processing, the processing time can be shortened by being able to register an expression peculiar to a user automatically, and updating automatically also about a word or the operating frequency of a phrase.
[0082] According to the 2nd building-management system concerning this invention, predetermined information, such as operational status of the device in a building and the set point, can be offered by the E-mail to a user.

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MEANS

[Means for Solving the Problem] The 1st building-management system concerning this invention minds the network for building management. In the building-management system which has a CC means to perform predetermined processing about building management, such as a setup of an operation control and an operation schedule, or collection of the predetermined information about the aforementioned device, to the device installed in the building An E-mail receives the processing demand from a user through the network for office, and it has an E-mail processing means to output the instruction controlled to perform processing based on this processing demand to the aforementioned CC means.
[0007] The aforementioned E-mail processing means consists of a control means receive the aforementioned E-mail the aforementioned processing demand was preferably described to be in the aforementioned 1st building-management system, a translation processing means translate to the intermediate language the aforementioned processing demand described by the aforementioned E-mail with natural language can recognize in the aforementioned CC means, and a command-processing means carry out the translated aforementioned intermediate language as the aforementioned instruction, and output to the aforementioned CC means.
[0008] Preferably, in the aforementioned 1st building-management system, the aforementioned command-processing means has a rule storing means to store the rule which controls the output method in the case of outputting the aforementioned intermediate language to the aforementioned central-process means according to the aforementioned intermediate language. The aforementioned command-processing means controls the output method to the CC means of the aforementioned intermediate language based on the aforementioned rule.
[0009] In the aforementioned 1st building-management system, the aforementioned translation processing means has preferably a dictionary means associate and memorize the aforementioned natural language and the aforementioned intermediate language, and the aforementioned translation processing means changes the aforementioned processing demand described by natural language to the aforementioned instruction described by the aforementioned intermediate language in the aforementioned E-mail by referring to the aforementioned dictionary means.
[0010] Preferably, in the aforementioned 1st building-management system, the aforementioned dictionary means is set up for every language, and is chosen according to the language which the aforementioned user uses.
[0011] Preferably, it sets to the aforementioned 1st building-management system, and the aforementioned dictionary means is set up for every predetermined field in a building, and is chosen according to the field to which the aforementioned user belongs.
[0012] Furthermore, in the aforementioned 1st building-management equipment, the aforementioned translation processing means has a learning function preferably. When the natural language which is not stored now is newly related with the aforementioned intermediate language, the aforementioned translation processing means relates the aforementioned natural language with the aforementioned intermediate language, and registers it into the aforementioned dictionary means. Moreover, in the aforementioned dictionary means, it is made to correspond with the aforementioned natural language,

and the operating frequency of this natural language is stored.
[0013] The 2nd building-management system concerning this invention is equipped with an E-mail processing means to notify a user of the predetermined information collected by the aforementioned CC means by the E-mail through the network for office, through the network for building management in the building-management system which has a CC means to collect the predetermined information in buildings, such as a state of the device installed in the building, the set point, or temperature/humidity.
[0014] Preferably, the aforementioned E-mail processing means consists of a command-processing means to receive the aforementioned predetermined information from the aforementioned CC means, a translation processing means to translate the predetermined information on the aforementioned CC means into natural language, and a control means to transmit the translation result by the aforementioned translation processing means to the aforementioned user by the aforementioned E-mail, in the aforementioned 2nd building-management system.
[0015]
[Embodiments of the Invention] Hereafter, the operation gestalt of the building-management equipment applied to this invention using an attached drawing is explained.
[0016] The hardware composition of the building-management system of this operation gestalt is shown in drawing 1 . The building-management system 11 of this operation gestalt consists of CPU (arithmetic and program control)13, display 15, the operation input unit 17, main storage 19, auxiliary memory 21, a OA-LAN interface 23, and a building-management network interface 27. Furthermore, the building-management system 11 is connected to the network 29 for building management which was connected with Local Area Network ("OA-LAN" is called hereafter.) 25 built in the office of each user in a building through the OA-LAN interface 23, and was connected to the device in buildings, such as air-conditioning equipment and lighting, through the building-management network interface 27.
[0017] CPU13 controls all operation of this building-management system 11 based on a predetermined program. Display 15 displays information, such as a state of the device which the building-management system 11 manages, and a setup of a schedule. The operation input unit 17 inputs the processing demand to the building-management system 11. Main storage 19 and auxiliary memory 21 store the program and data which CPU13 performs. The building-management network interface 27 performs the interface of the data between the building-management system 11 and the network 29 for building management for controlling an air conditioner, a lighting device, etc. in a building. The OA-LAN interface 23 performs the interface of the data between the building-management system 11 and OA-LAN25 built in the office of each user in a building.
[0018] The block block diagram of the building-management system 11 of this operation gestalt is shown in drawing 2 . Each functional block shown in drawing 2 is controlled by performing a predetermined program by CPU13 as mentioned above. The building-management system 11 consists of the E-mail processing section 31 and the CC section 33 in drawing 2 .
[0019] The CC section 33 collects the predetermined information over devices installed in the building, such as air-conditioning and lighting, which building-management systems, such as change of the various set points, such as an operation control, and a setup of a schedule, temperature / humidity setup, and operational status of a device, instrument settings, an inspection-of-a-meter value, temperature/humidity of each loculus in a building, manage through the network 29 for building management. The CC section 33 of this operation gestalt omits detailed explanation here that what is necessary is just what realizes the function of the above common building-management systems.
[0020] The E-mail processing section 31 consists of the control section 41, the translation processing section 43, the command-processing section 45, and the maintenance processing section 47, and has the user information 49 which is the data file referred to in each processing section, the domain dictionary 51, a user's dictionary 53, the rule set 55, the hold data 57, and historical data 59. The E-mail processing section 31 performs predetermined processing of the processing demand to the CC section 33, information offer to a user, etc. by performing predetermined processing to the E-mail exchanged between a user and a building-management system.
[0021] The control section 41 transmits and receives an E-mail among users through an electronic mail

system. That is, the control section 41 requests a translation of the received mail from the translation processing section 43, and performs demand processing of a user by transmitting a translation result to the command-processing section 45, and receives a processing result from the command-processing section 45, and notifies a user of this processing result by the E-mail.

[0022] The translation processing section 43 translates the mail described with the natural language transmitted by the user into the intermediate language which the CC section 33 can process, and translates into natural language conversely the message outputted from the building-management systems 11, such as a processing result. These translation processings are performed based on the request from the control section 41. Moreover, two or more translation processing sections 43 exist corresponding to an used language, and are chosen by the control section 41 based on a user's used language.

[0023] The command-processing section 45 outputs intermediate language to the CC section 33. At this time, the command-processing section 45 controls the output method to the CC section 33 of intermediate language according to the predetermined processing type according to the intermediate language transmitted from the control section 41. About a processing type detail, it mentions later.

[0024] The maintenance processing section 47 manages the data stored in the data file of the user information 49 referred to in case the above-mentioned processing is performed, the domain dictionary 51, a user's dictionary 53, and rule set 55 grade. That is, according to the demand inputted by the manager from the operation input unit 17, the addition of data, change, deletion, and reference which are stored in the above-mentioned data file are held.

[0025] The user information 49 stores the information about a user. The user to whom this building-management system use is permitted is registered into the user information 49. The user information 49 consists of the "user address", a "user name", a "root domain", and an "affiliation domain", as shown in drawing 3 . The user address is stored in the "user address." A user's name is stored in a "user name." The information showing the language which a user uses is stored in a "root domain." The field in the building where users, such as their affiliation post of a user and a tenant's sitting-room, reside in an "affiliation domain" is stored in front soot information. For example, information like "2 F-E (east side of the second floor)" and "2 F-W (west side of the second floor)" is stored. When a user has two or more root domains (used language), the value which shows the degree which specifies to which root domain priority is given is stored in a "priority."

[0026] The domain dictionary 51 is referred to in the translation processing section 43 at the time of the translation to the intermediate language which is the command which can recognize the building-management system 11 from natural language, or the translation to natural language from intermediate language. The domain dictionary 51 is set up for every used language of a user and every habitation field, and is chosen according to the value of the root domain in user information, and an affiliation domain. The domain dictionary 51 is the unit of its affiliation post a user's, a tenant's sitting-room, etc., carries out grouping of the user and stores information, such as an expression peculiar to the group.

[0027] The domain dictionary 51 consists of "natural language", "type", "intermediate language", and "operating frequency", as shown in drawing 4 . The word or phrase of natural language used during mail is stored in "natural language." The information which shows the kind of intermediate language corresponding to the word or phrase stored in "natural language" is stored in "type." For example, C:command, O:operand, P: There are some which combined a parameter, and C, O and P. The intermediate language corresponding to the word or phrase stored in "natural language" is stored in "intermediate language." The frequency for which "natural language" was used is stored in "operating frequency." This operating frequency is counted up whenever the word is used by the user.

[0028] A user's dictionary 53 has the same composition as the domain dictionary 51, as shown in drawing 5 </A>, and it is referred to like the domain dictionary 51 at the time of the translation to intermediate language from natural language, or the translation to natural language from intermediate language . The point that a user's dictionary 49 differs from the domain dictionary 51 has a user's dictionary 53 in the point of storing an expression peculiar to a user, to the domain dictionary 51 storing expression of group units, such as its post to which a user belongs. Therefore, a user's dictionary 53 is

further defined for every used language, when it defines for every user and a user uses two or more languages.

[0029] The rule set 55 stores the information on the processing type which is the control method of the output method of the intermediate language which should be processed in the command-processing section 45. In case the command-processing section 45 performs intermediate language, it checks the processing type of the intermediate language, and outputs intermediate language to the central-process section by the control method according to the processing type. The rule set 55 consists of a "user", a "command", an "operand", "type", and a "manager", as shown in drawing 6 . The user address is stored in a "user." The intermediate language which is the command which can recognize the building-management system 11 is stored in a "command." The value which shows the object device controlled is stored in an "operand." The processing type corresponding to the "user list", the "command", and the "operand" at this time is stored in "type." For example, E:exclusion type, S:share type, D:refusal type, and A: There is a checked type etc. About these processing types, it mentions later. When a check is needed to execution of processing, the user address of the manager who becomes a candidate for a check is stored in a "manager."

[0030] The hold data 57 store the information about the suspended processing demand, when it is necessary to suspend the processing demand while checking permission etc. to the processing demand from a user. Historical data 59 store the history of the processed demand processing in the building-management system 11.

[0031] The building-management system 11 of this operation form constituted as mentioned above In the E-mail processing section 31 by general-purpose electronic mail systems, such as MS-Mail (Microsoft Corp.) and cc : Mail (lotus company) The demand from the user transmitted via OA-LAN25 is received by the E-mail of the wording-of-a-telegram form according to SMTP (Simple Mail Transfer Protocol). The contents of the E-mail are translated and the instruction based on the contents is outputted to the CC section 33. The CC section 33 performs collection of information, such as motion control of the device in a building, change of the set point, condition monitoring, or a room temperature, etc. through the network 29 for building management based on the instruction from the E-mail processing section 31.

[0032] Below, operation of this building-management system is explained with reference to the flow chart of drawing 7 . This system is started by receiving the E-mail from a user in the E-mail processing section 31.

[0033] In the E-mail processing section 31, the control section 41 will check the justification of the user address first, if an E-mail is received from a user (S1) (S2). This is because only a user with authority enables access to this building-management equipment by checking the justification of the user address. A user judges the justification of the user address by whether it registers with the user information 49. Namely, the user address is specified from the header unit of an E-mail, and the data of the user information 49 are searched by using this user address as a search key. If the data which are in agreement with a search key in the user information 49 are not searched, this user is judged not to be the right user (S3), and ends processing. If the data whose user address corresponds are searched, it is judged that it is the right user (S3), and the user's used language is specified from the value of the root domain to the user address in the user information 49 (S4). If an used language is specified, the control section 41 will judge the kind of mail (S5). Here, the kind of mail used in this operation form is explained.

[0034] In the building-management system 11 of this operation form, when the mail from a user is not able to translate correctly, or when a certain check is needed to the processing demand from a user, the mail for a check ("check mail" is called hereafter.) is transmitted to a user. The building-management system 11 decides and performs a demand of a user by receiving the reply mail from the user to the check mail. Then, the control section 41 needs to judge the mail or reply mail with which the received mail was sent newly, and needs to carry out processing according to the kind of mail. A judgment of the kind of mail is made as follows using the information on the header unit under mail.

[0035] An example of the header unit of mail is shown in drawing 8 . Drawing 8 (a) expresses the

header of the mail transmitted from the building-management system 11 to the user, and drawing 8 (b) expresses the header unit of reply mail to drawing 8 (a). As shown in drawing 8 (a), the information which shows the message ID (Message-ID) for generally specifying the mail, transmitting time (Date), a transmitting person (From), and a transmission place (To) and a subject name (Subject) is included in a header unit. "BAS0001" of a subject name (Subject) expresses ID ("Control ID" is called hereafter.) which the control section 41 assigned to this check mail here. Control ID is managed by the control section 41 so that it may be assigned by the control section 41 to mail in case mail is transmitted, and the transmitted mail and the processing demand performed or suspended may be associated.

[0036] In the header unit of the reply mail shown in drawing 8 (b), it is shown that it is reply mail to the mail in which this mail has the control ID in which "Re:" in a subject name (Subject) is shown henceforth ["Re:"]. In this case, it is shown that it is reply mail to mail of "BAS0001." Thus, it can relate the reply mail to which mail transmitted before it is by being able to judge whether it is the mail with which the mail was newly sent by referring to a subject name (Subject), or it is reply mail to check mail, and referring to the control ID after "Re:" of a subject name, when it is reply mail.

[0037] The control section 41 judges the kind of mail by the above methods (S5). When reception mail is reply mail to the check mail at the time of a translation, it progresses to (S6) and a study manipulation routine (S7). A study manipulation routine is processing which learns an expression peculiar to a user, and, for details, mentions later. It progresses to a demand issue manipulation routine (S8) after a study manipulation-routine (S7) end. A demand issue manipulation routine is processing for performing a demand of a user, and, for details, mentions later. When reception mail is not reply mail to the check mail at the time of a translation, it progresses to (S6) and a demand issue manipulation routine (S8). When it is necessary after a demand issue manipulation-routine (S8) end to transmit the notice mail for the notice of a processing result and when a processing demand of a user is performed, and it is necessary to check permission etc., check mail is transmitted to a user or a predetermined manager (S9).

[0038] The above-mentioned demand issue manipulation routine is performed based on the flow chart shown in drawing 9 . [0039] which explains operation of this demand issue manipulation routine below. In a demand issue manipulation routine, the control section 41 requests a translation of the received mail from the translation processing section 43 determined from a user's root domain and affiliation domain first (S21). A translation manipulation routine is performed in the translation processing section 43 (S22). A translation manipulation routine performs processing which translates the contents of the mail described with natural language into the intermediate language which can recognize a building-management system, and, for details, mentions later. After a translation processing end, the control section 41 will judge whether the translation was successful, if a translation result is received from the translation processing section 43 (S23) (S24).

[0040] When a translation goes wrong, (S24) and translation processing are ended. When two or more meaning of a passage is chosen in the translation processing section 43 so that it may mention later, and it is not specified as one at this time, the check mail for checking meaning of a passage to a user is created, and check mail is transmitted to a user after a demand issue manipulation-routine end (S9). When a translation is successful, the intermediate language obtained by the translation result is transmitted to the command-processing section 45 to (S24) and the command-processing section 45 (S25). The command-processing section 45 performs a command-processing routine based on this intermediate language (S26). About detailed explanation of a command-processing routine, it mentions later. After processing is performed based on intermediate language in the command-processing section 45, the control section 41 receives the processing result (S27). The control section 41 creates the mail for notifying a user of a processing result based on the processing result (S28), and ends processing. The control section 41 performs demand issue processing as mentioned above. After a demand issue processing end, to the translation processing section 43, the control section 41 requests creation of the mail for notifying a processing result, and transmits the created mail to a user.

[0041] Next, the above-mentioned translation manipulation routine is explained using the flow chart of drawing 10 . A translation manipulation routine is performed in the translation processing section 43. As mentioned above, two or more translation processing sections 43 exist for every language, and are

chosen by the control section 41 corresponding to a user's used language (value of a user's root domain), and a user's habitation area (value of an affiliation domain).
[0042] a translation manipulation routine -- the translation processing section 43 -- first -- "out of the text under mail -- " and "-- a sentence is extracted by making ", a new-line code, etc. into a delimiter (S41)
[0043] The translation processing section 43 performs matching with the word or phrase registered into the word in the sentence or the phrase, and the user's dictionary 53, after extracting a sentence (S42). That is, it searches whether there is any same word or same phrase as the word or phrase stored in the field of "natural language" of a user's dictionary 53. When the word or phrase which corresponds in a user's dictionary 53 in a sentence is not searched, next with reference to the domain dictionary 51, it searches similarly. As a result of reference, in a sentence, when the word registered into the user's dictionary 53 and the domain dictionary 51 is not searched, the reply mail which tells that is created as (S43) and a translation being impossible (S51), and processing is ended.
[0044] As a result of reference, when only one meaning of a passage is acquired, the dictionary of the direction referred to for the meaning of a passage in (S44), the domain dictionary 51, or a user's dictionary 53 is updated (S48). That is, "the operating frequency" of the data applicable to the searched meaning of a passage is made to increase. Then, it notifies to the control section 41 by making the acquired meaning of a passage into a translation result (S49), and processing is ended. As a result of reference, when two or more meaning of a passage is acquired, according to the rule 1 or rule 2 shown in (S44) and the following, one of two or more meaning of a passage is chosen.
[0045] Rule 1: Choose the word or phrase with much combination of a mold of a command among the word which matched, or a phrase.
Rule 2: The score of each word or a phrase is computed and choose what has the highest score from which other words or a difference with the score of a phrase becomes beyond a predetermined value.
[0046] the time of two or more meaning of a passage being acquired -- (S44) -- meaning of a passage is first specified by the rule 1 (S45) When it cannot specify by the rule 1, meaning of a passage is specified by (S46) and the rule 2 (S47). Also by the rule 2, when meaning of a passage cannot be specified, (S48) translation impossible notice mail is created (S51). An example is shown below and the specific method of the meaning of a passage in a rule 1 and a rule 2 is explained to it.
[0047] For example, the time of the sentence "turn ON air conditioning" being extracted from the description in reception mail is considered. At this time, the word "air conditioning" and "air conditioning ON" matches in the field of the "natural language" in the domain dictionary 51 shown in drawing 4 . At this time, the mold of "air conditioning" is "O" showing an operand, and the mold of "air conditioning ON" is "CO" showing the combination of a command and an operand. For this reason, according to a rule 1, the "air conditioning ON" with much combination of a mold is chosen, and let "ON, 2 F-PAC -1" which are the intermediate language corresponding to this be a translation result. Here, "ON" of intermediate language is a command which puts into operation the device specified with an operand, and "2 F-PAC -1" expresses the operand which shows air-conditioning equipment, such as an air-conditioner in a specific place.
[0048] Moreover, the case where the following two sentences are extracted out of mail is considered.
(-- 1) "please turn ON air-conditioning."
(-- 2) "Air-conditioning OFF"
[0049] In this case, in the domain dictionary 51 shown in drawing 4 , by the sentence (1), "air-conditioning and ON" match, in a sentence (2), "air-conditioning and OFF" match and two meaning-of-a-passage candidates are obtained. Both the molds of these commands serve as "CO", and since it is the same, they cannot be specified with a rule 1. Therefore, based on a rule 2, it is necessary to compute each score and to determine any are chosen from the score difference.
[0050] Calculation of a score is computed by adding what integrated the weight of minus to the number of the word with which the operating frequency of the word was matched in the sentence, or words other than a phrase. Here, as shown in drawing 4 , each operating frequency is 20, and in a sentence (1), since there are seven words other than "air-conditioning" and "ON", if weight of minus is set to 1, the score of

minus will be set to 7. In a sentence (2), since there are no words other than "air-conditioning" and "ON", the score of minus is set to 0. The score of the meaning-of-a-passage candidate of a sentence (1) is set to 20-7=13, and the score of the meaning-of-a-passage candidate of a sentence (2) is set to 20-0=20. Therefore, the score difference of both sentences is set to 7.

[0051] This score difference and reference value are compared. A score difference chooses the higher one of a score as a translation result beyond a reference value at a certain time. It checks which demand is performed to a user by transmitting check mail noting that it cannot decide with which meaning-of-a-passage candidate, when this score difference is less than a reference value. When a reference value is set to 5, since a score difference is 7, a sentence (2) is specified in this case.

[0052] When there are two or more meaning-of-a-passage candidates as mentioned above, according to a rule 1 or a rule 2, it is specified as one meaning of a passage. When meaning of a passage is specified, the value of the selected word or "the operating frequency" of a phrase is made to increase in the user's dictionary 53 or the domain dictionary 51 referred to for the word or phrase (S49). By making this operating frequency increase, the past operating experience is learned and what has the past high operating frequency becomes that it is easy to be chosen at the time of subsequent selections (at the time of score calculation). A translation result is notified to the command-processing section 45 after renewal of user's dictionary or domain dictionary 51 (S50), and a translation manipulation routine is ended.

[0053] Next, the above-mentioned study manipulation routine is explained. As mentioned above, in the building-management system 11, when the sentence described by the mail transmitted by the user is not registered into a user's dictionary 53 or the domain dictionary 51 and cannot translate, or when two or more meaning of a passage cannot be specified since it is the sentence of an ambiguous expression, the check mail for checking meaning of a passage again is transmitted to a user. After receiving the reply mail to this check mail, when processing is decided by translating this, a user has the learning function which registers into a user's dictionary 53 automatically expression described by the mail transmitted first as a new translation. The study manipulation routine which realizes such a learning function is explained using the flow chart of drawing 11 .

[0054] In a study manipulation routine, the translation processing section 43 performs translation processing shown with the flow chart of drawing 10 (S61). Next, when a translation result is judged (S62) and it translates correctly (i.e., when it translates into intermediate language uniquely), expression of the natural language described by check mail of the origin which receives the received reply mail is related with intermediate language, and is newly registered into a user's dictionary 53 (S63). Thus, when it learns by registering an expression peculiar to a user into a user's dictionary 53 and the processing demand by the same expression is made from the same user after that, a translation becomes possible, without checking to a user. When reception mail is not translated correctly, it does not process and a study manipulation routine is ended.

[0055] Next, a command-processing routine is explained. A command-processing routine is performed by the command-processing section 45, and is outputted to the CC section 33 by considering intermediate language transmitted from the control section 41 as an instruction. At this time, the control section 41 controls the output method for the CC section 33 of intermediate language based on the predetermined processing type according to intermediate language. When two or more conflicting requirements are made by specifying a processing type according to intermediate language as mentioned above, it will check, if a setting user or a manager has the need, and judges to which demand processing priority is given. There are five types as shown below among these processing types.

[0056] (a) In an exclusion type exclusion type, when there is an effective prior setup to a certain device, change by other users cannot be performed. When the processing demand by this type of intermediate language is made, if the manager is set as the rule set with the user who performed the demand, and the user who performed the present setup, the notice mail which notifies the manager of the purport which newly had a processing demand will be transmitted.

[0057] (b) In a shared type share type, even when there is an effective prior setup to a certain device, change by other users can be performed. That is, the processing demand newest in the time becomes effective. When the processing demand by this type of intermediate language is made, if the manager is

set as the rule set with the user who performed the processing demand, and the user who performed the present setup, the notice mail which notifies the purport into which the processing demand was changed by the manager will be transmitted.

[0058] (c) In the granted type permission type of a permission, there is an effective prior setup by the user who has received a certain device, and if the manager is set as the rule set with the user who performed the present setup when the demand of setting change is performed by other users, the check mail for obtaining permission, respectively will be transmitted to the manager. A setup is changed when "permission" is obtained with the reply mail from a manager specified to be the user who performed a setup effective now after the check mail transmission and in a predetermined time, or a rule set. A setup is not changed when "permission" is not able to be obtained in a predetermined time. Moreover, the demand by which the inside of the predetermined time which waits for reception of reply mail was newly made is suspended after check mail transmission.

[0059] (d) In a refused type refusal type, if the manager is set as the rule set with the user who performed the present setup when there is an effective prior setup by a certain user and the demand of setting change is performed by other users to a certain device, the check mail for checking "refusal" will be transmitted to the manager. A demand is refused when "refusal" is obtained with the reply mail from a manager specified to be the user who performed a setup effective now after the check mail transmission and in a predetermined time, or a rule set. A new demand becomes effective when the reply mail which decides "refusal" is not answered. Moreover, the demand by which the inside of a predetermined time until it receives reply mail was newly made is suspended after check mail transmission.

[0060] (e) In a checked type check type, there is an effective prior setup by the user who has received a certain device, and when the demand of setting change is performed by other users, transmit check mail to the user who performed the demand. When the demand is checked by the reply mail transmitted by the user, the newly made demand is set up.

[0061] The information processing type [above] is stored in the "type" in the rule set 55. That is, in the command-processing section 45, the "user", the "command", and the "operand" which were transmitted from the control section 41 are searched as a key, and a processing type is determined from the field of "type" of the corresponding data.

[0062] The flow chart of drawing 12 is used for below, and operation of a command-processing routine is explained to it. In a command-processing routine, first, the command-processing section 45 uses the user address, intermediate language, and an operand as a search key, the rule set 55 is searched, and the processing type to the intermediate language is recognized (S81). Next, a processing type is judged (S82), and when a processing type is an "exclusion type", a processing type is a "shared type" at Step S83, a processing type is "the granted type of a permission" at Step S84 and a processing type is a "refused type" at Step S85, when a processing type is a "checked type", it progresses to Step S87 in Step S86.

[0063] In exclusion type processing (S83), the command-processing section 45 operates in the procedure shown in the flow chart of drawing 13 . In drawing 13 , the command-processing section 45 checks first whether the same processing demand is set up in advance with reference to historical data 59 (S101). When the same processing demand is already set up, (S102) and processing are ended. When not set up, by outputting intermediate language to (S102) and the CC section 33, processing of the demand from a user is requested (S103), and history information, such as a user name, the set-up contents of processing, the setup time, and a processing result, is registered into historical data 59 (S104). Then, a processing result is notified to the control section 41 (S105).

[0064] In shared type processing (S84), the command-processing section 45 operates in the procedure shown in the flow chart of drawing 14 . In drawing 14 , the command-processing section 45 requests execution of the demand processing from a user by outputting intermediate language to the CC section 33 (S121). Then, the history information on the processing performed by historical data 59 is registered and carried out (S122), and a processing result is outputted to the control section 41 (S123).

[0065] In the granted type processing (S85) of a permission, the command-processing section 45

operates in the procedure shown in the flow chart of drawing 15 . First, the command-processing section 45 judges whether the mail under present processing is reply mail to the check mail transmitted in advance in order to obtain permission (S141). When the mail under present processing is not reply mail, it judges whether the processing demand which already corresponds is set up (S142). When the already set-up processing demand exists, the demand processing is recorded on (S142) and the hold data 57 as hold demand processing (S143). Next, a processing result is outputted to the control section 41 so that the check mail for obtaining permission to the manager of the user who performed a setup effective now, or the device specified in user information may be transmitted (S144). When the corresponding processing is not set up, by outputting intermediate language to (S142) and the CC section 33, execution of the processing demand from a user is requested (S145), and historical data 59 are updated (S146). Then, a processing result is outputted to the control section 41 (S147).

[0066] When the mail under present processing is reply mail, (S141) and the command-processing section 45 judge whether the processing demand was permitted (S148). When a permission is granted, execution of the processing demand suspended into (S148) and the hold data 57 is requested by outputting intermediate language to the CC section 33 (S149), and historical data 59 are updated (S150). Then, the hold demand processed data to which it corresponds in the hold data 57 are deleted (S151), a processing result is outputted to the control section 41 (S152), and processing is ended. A processing result is outputted to the control section 41 so that the mail which deletes the hold demand processed data to which it corresponds in (S148) and the hold data 57 when a permission is not granted (S151), and notifies the purport which was not permitted may be created (S152), and processing is ended.

[0067] In refused type processing (S86), the command-processing section 45 operates according to the procedure shown in the flow chart of drawing 16 . In drawing 16 , the command-processing section 45 judges whether it is reply mail to the check mail transmitted in advance, in order that the mail under present processing may check refusal (S161). When the mail under present processing is not the reply mail, it judges whether (S161) and the processing which already corresponds are set up (S162). When the processing which already corresponds is set up, the processing demand is recorded on (S162) and the hold data 57 as hold demand processing (S163), and a processing result is outputted to the control section 41 so that mail may be transmitted to the manager of the user who performed a setup effective now, or the device specified in user information (S164). When the corresponding processing is not set up, by outputting intermediate language to (S162) and the CC section 33, execution of the processing demand from a user is requested (S165), historical data 59 are updated (S166), a processing result is outputted to the control section 41 (S167), and processing is ended.

[0068] When the mail under present processing is reply mail, it is judged whether (S161) and its processing demand were refused (S168). When not refused, execution of the processing demand suspended into (S168) and the hold data 57 is requested by outputting intermediate language to the CC section 33 (S169), and historical data 59 are updated (S170). Then, the hold demand processed data in the hold data 57 are deleted (S171), a processing result is outputted to the control section 41 (S172), and processing is ended. When refused, the hold demand processed data in (S168) and the hold data 57 are deleted (S171), a processing result is outputted to the control section 41 (S172), and processing is ended.

[0069] In checked type processing (S87), the command-processing section 45 operates according to the flow chart of drawing 17 . In drawing 17 , it judges whether the command-processing section 45 is reply mail to the check mail with which the mail under present processing was transmitted in advance (S180). When the mail under present processing is not reply mail, the demand processing is recorded as hold demand processing at (S180) and the hold data 57 (S181), and a processing result is outputted to the control section 41 so that mail may be transmitted to the manager of the device specified in the user information 49 (S182). When the mail under present processing is reply mail, (S180) and historical data 59 are updated (S183), execution of the processing demand from a user is requested by outputting intermediate language to the CC section 33 (S184), the corresponding hold demand processed data which were recorded into the hold data 57 are deleted (S185), a processing result is outputted (S186), and processing is ended.

[0070] Thus, in the command-processing section 45 of this operation form, the output of the intermediate language to the CC section is controlled according to the published processing type of intermediate language. That is, when the same processing demand is made, based on a processing type, processing to the CC section is performed automatically, or processing to the CC section is requested after a check about a processing demand to be checked. When the processing to which plurality is contradictory with a user is required by this, based on a predetermined procedure, processing can be completed without conflict.

[0071] As mentioned above, although operation of the building-management system of this operation form was explained, an exchange of the mail in the building-management system of this operation form is concretely shown using drawing 18 below.

[0072] If the mail shown in drawing 18 (a) is transmitted from a user (satoh) to a building-management system (BAS), after the justification and the used language of the user address (satoh) are checked, in the control section 41, a translation will be performed as mentioned above. In the translation processing section, first, "Lighting ON" is specified as a sentence and matching with the word in this sentence or a phrase, and the word registered into the user's dictionary 53 or the domain dictionary 51 is performed.

[0073] Here, since the word "lighting" is registered into the domain dictionary 51 as shown in drawing 4 , the word this "lighting" is searched by matching. However, from a word "lighting", since it specifies which device is made into a processing object in the translation processing section 43 since two meaning-of-a-passage candidates, "2 F-LA" and "2 F-LB", are obtained, check mail as shown in drawing 18 (b) is created, and it is transmitted to a user. If the reply mail which tells the purport which chooses the "candidate 1" as shown in drawing 18 (c) from a user is answered, in the translation processing section 43, based on reply mail of drawing 18 (c), a processing object will be decided and the intermediate language based on the demand from a user will be generated. At this time, the translation processing section 43 is learned by relating the word "Lighting ON" with the intermediate language "ON, 2 F-LA", and registering with a user's dictionary 53 according to the content of the reply mail shown in drawing 18 (c). It can translate into intermediate language, without checking to a user, when the mail "Lighting ON" is transmitted from the same user after that by this.

[0074] The control section 41 transmits this translated intermediate language to the command-processing section 45. The command-processing section 45 checks the processing type of this intermediate language. If the rule set shown in drawing 6 is referred to, since the processing type in this case is "S" showing a shared type, it will become effective newest requiring it. For this reason, the command-processing section 45 outputs intermediate language to the CC section 33, without checking setting change to a prior user. The CC section 33 turns on the lighting device specified according to this intermediate language. After processing by the CC section 33 is completed, the command-processing section 45 notifies a processing result to the control section 41, and the control section 41 transmits notice mail of a processing result like drawing 18 (d) to a user, and ends processing.

[0075] Based on the contents of the E-mail transmitted by the user, information offer of control of operation of the device in a building, a setup of a schedule, a setup of the present condition of a schedule, an environmental parameter, etc. can be performed [in / the building-management system of this operation form / as mentioned above]. Since the translation processing section is set up for every habitation area of every language which a user uses, and a user at this time, the device which the translation of according to the language which a user uses is attained, and serves as a controlled system according to a user's affiliation area can be specified automatically. Furthermore, when performing the demand from a user and there is a conflicting requirement from two or more users since the processing type is set up according to the contents of the demand, processing can be completed without conflict with a predetermined procedure.

[Translation done.]

* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The hardware block diagram of the building-management equipment concerning this invention.
[Drawing 2] The block block diagram of the operation gestalt of the building-management equipment concerning this invention.
[Drawing 3] Drawing showing the composition of user information, and an example of storing data.
[Drawing 4] Drawing showing the composition of a domain dictionary, and an example of storing data.
[Drawing 5] Drawing showing the composition of a user's dictionary, and an example of storing data.
[Drawing 6] Drawing showing the composition of a rule set, and an example of storing data.
[Drawing 7] The flow chart which shows operation of the E-mail processing section in the building-management equipment of this operation gestalt.
[Drawing 8] Drawing showing the header unit in the E-mail which sets in this operation gestalt and is made into it.
[Drawing 9] The flow chart which shows operation of a demand issue manipulation routine.
[Drawing 10] The flow chart which shows operation of a translation manipulation routine.
[Drawing 11] The flow chart which shows operation of a study manipulation routine.
[Drawing 12] The flow chart which shows operation of a command-processing routine.
[Drawing 13] The flow chart which shows processing in case a processing type is an exclusion type.
[Drawing 14] The flow chart which shows processing in case a processing type is a shared type.
[Drawing 15] The flow chart which shows processing in case a processing type is the granted type of a permission.
[Drawing 16] The flow chart which shows processing in case a processing type is a refused type.
[Drawing 17] The flow chart which shows processing in case a processing type is a checked type.
[Drawing 18] Drawing showing an example of the E-mail which sets to the building-management equipment of this operation gestalt, and is used as it.
[Description of Notations]
11 [-- Display, 17 / -- Operation input unit,] -- A building-management system, 13 -- CPU, 15 19 [-- OA-LAN interface,] -- Main storage, 21 -- Auxiliary memory, 23 25 -- OA-LAN, 27 -- The network interface for building management, 29 [-- CC section,] -- The network for building management, 31 -- The E-mail processing section, 33 41 [-- The command-processing section, 47 / -- The maintenance processing section, 49 / -- User information, 51 / -- A domain dictionary, 53 / -- A user's dictionary, 55 / -- A rule set, 57 / -- Hold data, 59 / -- Historical data.] -- The control section, 43 -- The translation processing section, 45

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention is a building-management system which performs control of devices, such as air-conditioning in a building, and lighting, condition monitoring, etc., and a user is especially related with the building-management system which can perform remote operation of these devices, and informational collection through an electronic mail system.
[0002]
[Description of the Prior Art] In the building-management system which performs control and the surveillance of devices, such as an air conditioner in a building, and lighting, control and the surveillance of these devices are intensively performed through a network at a central surveillance room. Generally, when the resident (a "user" is called hereafter.) of a building demands change of schedules, such as extension of the air-conditioning operation time of a building, the check of setting temperature, deactivation, etc., it is necessary to use and connect a telephone, FAX, etc. to this central surveillance room. The operator of a central surveillance room operates a building-management system based on the connection, and performs demanded processing. Moreover, a user acquires these information by connecting with a central surveillance room by telephone etc. similarly to check the temperature set up now, the operation schedule of a device, etc. These work had become the burden of an operator in order that it might perform setting change operation and check operation whenever the operator of a central surveillance room has the connection from a user, and it might connect them to a user.
[0003] Using a multi-function telephone, PBX (private branch exchange), or the user terminal of exclusive use as a method for mitigating the burden of such an operator, a resident accesses a building-management system directly and there is the method of checking [schedule / the input of operation change, the set point,].
[0004]
[Problem(s) to be Solved by the Invention] However, by the method using the hardware of such exclusive use, there is a trouble that the hardware of exclusive use and the software of exclusive use must be installed separately. Moreover, there is a problem that a user has to understand the operating instruction of exclusive hardware. Furthermore, when a conflicting requirement is inputted from two or more users, it cannot respond automatically but the operator of a central surveillance room needs to correspond.
[0005] this invention has the place which it is made that the above-mentioned problem should be solved and is made into the purpose in offering the building-management system which can perform the processing demand of an information check of the operation control of devices, such as an air conditioner and lighting, the set point, temperature, etc., etc. by the E-mail, without minding an operator.

[0006]
[Means for Solving the Problem] The 1st building-management system concerning this invention minds the network for building management. In the building-management system which has a CC means to

perform predetermined processing about building management, such as a setup of an operation control and an operation schedule, or collection of the predetermined information about the aforementioned device, to the device installed in the building An E-mail receives the processing demand from a user through the network for office, and it has an E-mail processing means to output the instruction controlled to perform processing based on this processing demand to the aforementioned CC means.
[0007] The aforementioned E-mail processing means consists of a control means receive the aforementioned E-mail the aforementioned processing demand was preferably described to be in the aforementioned 1st building-management system, a translation processing means translate to the intermediate language the aforementioned processing demand described by the aforementioned E-mail with natural language can recognize in the aforementioned CC means, and a command-processing means carry out the translated aforementioned intermediate language as the aforementioned instruction, and output to the aforementioned CC means.
[0008] Preferably, in the aforementioned 1st building-management system, the aforementioned command-processing means has a rule storing means to store the rule which controls the output method in the case of outputting the aforementioned intermediate language to the aforementioned central-process means according to the aforementioned intermediate language. The aforementioned command-processing means controls the output method to the CC means of the aforementioned intermediate language based on the aforementioned rule.
[0009] In the aforementioned 1st building-management system, the aforementioned translation processing means has preferably a dictionary means associate and memorize the aforementioned natural language and the aforementioned intermediate language, and the aforementioned translation processing means changes the aforementioned processing demand described by natural language to the aforementioned instruction described by the aforementioned intermediate language in the aforementioned E-mail by referring to the aforementioned dictionary means.
[0010] Preferably, in the aforementioned 1st building-management system, the aforementioned dictionary means is set up for every language, and is chosen according to the language which the aforementioned user uses.
[0011] Preferably, it sets to the aforementioned 1st building-management system, and the aforementioned dictionary means is set up for every predetermined field in a building, and is chosen according to the field to which the aforementioned user belongs.
[0012] Furthermore, in the aforementioned 1st building-management equipment, the aforementioned translation processing means has a learning function preferably. When the natural language which is not stored now is newly related with the aforementioned intermediate language, the aforementioned translation processing means relates the aforementioned natural language with the aforementioned intermediate language, and registers it into the aforementioned dictionary means. Moreover, in the aforementioned dictionary means, it is made to correspond with the aforementioned natural language, and the operating frequency of this natural language is stored.
[0013] The 2nd building-management system concerning this invention is equipped with an E-mail processing means to notify a user of the predetermined information collected by the aforementioned CC means by the E-mail through the network for office, through the network for building management in the building-management system which has a CC means to collect the predetermined information in buildings, such as a state of the device installed in the building, the set point, or temperature/humidity.
[0014] Preferably, the aforementioned E-mail processing means consists of a command-processing means to receive the aforementioned predetermined information from the aforementioned CC means, a translation processing means to translate the predetermined information on the aforementioned CC means into natural language, and a control means to transmit the translation result by the aforementioned translation processing means to the aforementioned user by the aforementioned E-mail, in the aforementioned 2nd building-management system.
[0015]
[Embodiments of the Invention] Hereafter, the operation form of the building-management equipment applied to this invention using an attached drawing is explained.

[0016] The hardware composition of the building-management system of this operation form is shown in drawing 1 . The building-management system 11 of this operation form consists of CPU (arithmetic and program control)13, display 15, the operation input unit 17, main storage 19, auxiliary memory 21, a OA-LAN interface 23, and a building-management network interface 27. Furthermore, the building-management system 11 is connected to the network 29 for building management which was connected with Local Area Network ("OA-LAN" is called hereafter.) 25 built in the office of each user in a building through the OA-LAN interface 23, and was connected to the device in buildings, such as air-conditioning equipment and lighting, through the building-management network interface 27.
[0017] CPU13 controls all operation of this building-management system 11 based on a predetermined program. Display 15 displays information, such as a state of the device which the building-management system 11 manages, and a setup of a schedule. The operation input unit 17 inputs the processing demand to the building-management system 11. Main storage 19 and auxiliary memory 21 store the program and data which CPU13 performs. The building-management network interface 27 performs the interface of the data between the building-management system 11 and the network 29 for building management for controlling an air conditioner, a lighting device, etc. in a building. The OA-LAN interface 23 performs the interface of the data between the building-management system 11 and OA-LAN25 built in the office of each user in a building.
[0018] The block block diagram of the building-management system 11 of this operation form is shown in drawing 2 . Each functional block shown in drawing 2 is controlled by performing a predetermined program by CPU13 as mentioned above. The building-management system 11 consists of the E-mail processing section 31 and the CC section 33 in drawing 2 .
[0019] The CC section 33 collects the predetermined information over devices installed in the building, such as air-conditioning and lighting, which building-management systems, such as change of the various set points, such as an operation control, and a setup of a schedule, temperature / humidity setup, and operational status of a device, instrument settings, an inspection-of-a-meter value, temperature/humidity of each loculus in a building, manage through the network 29 for building management. The CC section 33 of this operation form omits detailed explanation here that what is necessary is just what realizes the function of the above common building-management systems.
[0020] The E-mail processing section 31 consists of the control section 41, the translation processing section 43, the command-processing section 45, and the maintenance processing section 47, and has the user information 49 which is the data file referred to in each processing section, the domain dictionary 51, a user's dictionary 53, the rule set 55, the hold data 57, and historical data 59. The E-mail processing section 31 performs predetermined processing of the processing demand to the CC section 33, information offer to a user, etc. by performing predetermined processing to the E-mail exchanged between a user and a building-management system.
[0021] The control section 41 transmits and receives an E-mail among users through an electronic mail system. That is, the control section 41 requests a translation of the received mail from the translation processing section 43, and performs demand processing of a user by transmitting a translation result to the command-processing section 45, and receives a processing result from the command-processing section 45, and notifies a user of this processing result by the E-mail.
[0022] The translation processing section 43 translates the mail described with the natural language transmitted by the user into the intermediate language which the CC section 33 can process, and translates into natural language conversely the message outputted from the building-management systems 11, such as a processing result. These translation processings are performed based on the request from the control section 41. Moreover, two or more translation processing sections 43 exist corresponding to an used language, and are chosen by the control section 41 based on a user's used language.
[0023] The command-processing section 45 outputs intermediate language to the CC section 33. At this time, the command-processing section 45 controls the output method to the CC section 33 of intermediate language according to the predetermined processing type according to the intermediate language transmitted from the control section 41. About a processing type detail, it mentions later.

[0024] The maintenance processing section 47 manages the data stored in the data file of the user information 49 referred to in case the above-mentioned processing is performed, the domain dictionary 51, a user's dictionary 53, and rule set 55 grade. That is, according to the demand inputted by the manager from the operation input unit 17, the addition of data, change, deletion, and reference which are stored in the above-mentioned data file are held.

[0025] The user information 49 stores the information about a user. The user to whom this building-management system use is permitted is registered into the user information 49. The user information 49 consists of the "user address", a "user name", a "root domain", and an "affiliation domain", as shown in drawing 3 . The user address is stored in the "user address." A user's name is stored in a "user name." The information showing the language which a user uses is stored in a "root domain." The field in the building where users, such as their affiliation post of a user and a tenant's sitting-room, reside in an "affiliation domain" is stored in front soot information. For example, information like "2 F-E (east side of the second floor)" and "2 F-W (west side of the second floor)" is stored. When a user has two or more root domains (used language), the value which shows the degree which specifies to which root domain priority is given is stored in a "priority."

[0026] The domain dictionary 51 is referred to in the translation processing section 43 at the time of the translation to the intermediate language which is the command which can recognize the building-management system 11 from natural language, or the translation to natural language from intermediate language. The domain dictionary 51 is set up for every used language of a user and every habitation field, and is chosen according to the value of the root domain in user information, and an affiliation domain. The domain dictionary 51 is the unit of its affiliation post a user's, a tenant's sitting-room, etc., carries out grouping of the user and stores information, such as an expression peculiar to the group.

[0027] The domain dictionary 51 consists of "natural language", "type", "intermediate language", and "operating frequency", as shown in drawing 4 . The word or phrase of natural language used during mail is stored in "natural language." The information which shows the kind of intermediate language corresponding to the word or phrase stored in "natural language" is stored in "type." For example, C:command, O:operand, P: There are some which combined a parameter, and C, O and P. The intermediate language corresponding to the word or phrase stored in "natural language" is stored in "intermediate language." The frequency for which "natural language" was used is stored in "operating frequency." This operating frequency is counted up whenever the word is used by the user.

[0028] A user's dictionary 53 has the same composition as the domain dictionary 51, as shown in drawing 5 , and it is referred to like the domain dictionary 51 at the time of the translation to intermediate language from natural language, or the translation to natural language from intermediate language. The point that a user's dictionary 49 differs from the domain dictionary 51 has a user's dictionary 53 in the point of storing an expression peculiar to a user, to the domain dictionary 51 storing expression of group units, such as its post to which a user belongs. Therefore, a user's dictionary 53 is further defined for every used language, when it defines for every user and a user uses two or more languages.

[0029] The rule set 55 stores the information on the processing type which is the control method of the output method of the intermediate language which should be processed in the command-processing section 45. In case the command-processing section 45 performs intermediate language, it checks the processing type of the intermediate language, and outputs intermediate language to the central-process section by the control method according to the processing type. The rule set 55 consists of a "user", a "command", an "operand", "type", and a "manager", as shown in drawing 6 . The user address is stored in a "user." The intermediate language which is the command which can recognize the building-management system 11 is stored in a "command." The value which shows the object device controlled is stored in an "operand." The processing type corresponding to the "user list", the "command", and the "operand" at this time is stored in "type." For example, E:exclusion type, S:share type, D:refusal type, and A: There is a checked type etc. About these processing types, it mentions later. When a check is needed to execution of processing, the user address of the manager who becomes a candidate for a check is stored in a "manager."

[0030] The hold data 57 store the information about the suspended processing demand, when it is necessary to suspend the processing demand while checking permission etc. to the processing demand from a user. Historical data 59 store the history of the processed demand processing in the building-management system 11.
[0031] The building-management system 11 of this operation gestalt constituted as mentioned above In the E-mail processing section 31 by general-purpose electronic mail systems, such as MS-Mail (Microsoft Corp.) and cc : Mail (lotus company) The demand from the user transmitted via OA-LAN25 is received by the E-mail of the wording-of-a-telegram form according to SMTP (Simple Mail Transfer Protocol). The content of the E-mail is translated and the instruction based on the content is outputted to the CC section 33. The CC section 33 performs collection of information, such as motion control of the device in a building, change of the set point, condition monitoring, or a room temperature, etc. through the network 29 for building management based on the instruction from the E-mail processing section 31.

[0032] Below, operation of this building-management system is explained with reference to the flow chart of drawing 7 . This system is started by receiving the E-mail from a user in the E-mail processing section 31.
[0033] In the E-mail processing section 31, the control section 41 will check the justification of the user address first, if an E-mail is received from a user (S1) (S2). This is because only a user with authority enables access to this building-management equipment by checking the justification of the user address. A user judges the justification of the user address by whether it registers with the user information 49. Namely, the user address is specified from the header unit of an E-mail, and the data of the user information 49 are searched by using this user address as a search key. If the data which are in agreement with a search key in the user information 49 are not searched, this user is judged not to be the right user (S3), and ends processing. If the data whose user address corresponds are searched, it is judged that it is the right user (S3), and the user's used language is specified from the value of the root domain to the user address in the user information 49 (S4). If an used language is specified, the control section 41 will judge the kind of mail (S5). Here, the kind of mail used in this operation gestalt is explained.
[0034] In the building-management system 11 of this operation gestalt, when the mail from a user is not able to translate correctly, or when a certain check is needed to the processing demand from a user, the mail for a check ("check mail" is called hereafter.) is transmitted to a user. The building-management system 11 decides and performs a demand of a user by receiving the reply mail from the user to the check mail. Then, the control section 41 needs to judge the mail or reply mail with which the received mail was sent newly, and needs to carry out processing according to the kind of mail. A judgment of the kind of mail is made as follows using the information on the header unit under mail.
[0035] An example of the header unit of mail is shown in drawing 8 . Drawing 8 (a) expresses the header of the mail transmitted from the building-management system 11 to the user, and drawing 8 (b) expresses the header unit of reply mail to drawing 8 (a). As shown in drawing 8 (a), the information which shows the message ID (Message-ID) for generally specifying the mail, transmitting time (Date), a transmitting person (From), and a transmission place (To) and a subject name (Subject) is included in a header unit. "BAS0001" of a subject name (Subject) expresses ID ("Control ID" is called hereafter.) which the control section 41 assigned to this check mail here. Control ID is managed by the control section 41 so that it may be assigned by the control section 41 to mail in case mail is transmitted, and the transmitted mail and the processing demand performed or suspended may be associated.
[0036] In the header unit of the reply mail shown in drawing 8 (b), it is shown that it is reply mail to the mail in which this mail has the control ID in which "Re:" in a subject name (Subject) is shown henceforth ["Re:"]. In this case, it is shown that it is reply mail to mail of "BAS0001." Thus, it can relate the reply mail to which mail transmitted before it is by being able to judge whether it is the mail with which the mail was newly sent by referring to a subject name (Subject), or it is reply mail to check mail, and referring to the control ID after "Re:" of a subject name, when it is reply mail.
[0037] The control section 41 judges the kind of mail by the above methods (S5). When reception mail

is reply mail to the check mail at the time of a translation, it progresses to (S6) and a study manipulation routine (S7). A study manipulation routine is processing which learns an expression peculiar to a user, and, for details, mentions later. It progresses to a demand issue manipulation routine (S8) after a study manipulation-routine (S7) end. A demand issue manipulation routine is processing for performing a demand of a user, and, for details, mentions later. When reception mail is not reply mail to the check mail at the time of a translation, it progresses to (S6) and a demand issue manipulation routine (S8). When it is necessary after a demand issue manipulation-routine (S8) end to transmit the notice mail for the notice of a processing result and when a processing demand of a user is performed, and it is necessary to check permission etc., check mail is transmitted to a user or a predetermined manager (S9).
[0038] The above-mentioned demand issue manipulation routine is performed based on the flow chart shown in drawing 9 . [0039] which explains operation of this demand issue manipulation routine below In a demand issue manipulation routine, the control section 41 requests a translation of the received mail from the translation processing section 43 determined from a user's root domain and affiliation domain first (S21). A translation manipulation routine is performed in the translation processing section 43 (S22). A translation manipulation routine performs processing which translates the contents of the mail described with natural language into the intermediate language which can recognize a building-management system, and, for details, mentions later. After a translation processing end, the control section 41 will judge whether the translation was successful, if a translation result is received from the translation processing section 43 (S23) (S24).
[0040] When a translation goes wrong, (S24) and translation processing are ended. When two or more meaning of a passage is chosen in the translation processing section 43 so that it may mention later, and it is not specified as one at this time, the check mail for checking meaning of a passage to a user is created, and check mail is transmitted to a user after a demand issue manipulation-routine end (S9). When a translation is successful, the intermediate language obtained by the translation result is transmitted to the command-processing section 45 to (S24) and the command-processing section 45 (S25). The command-processing section 45 performs a command-processing routine based on this intermediate language (S26). About detailed explanation of a command-processing routine, it mentions later. After processing is performed based on intermediate language in the command-processing section 45, the control section 41 receives the processing result (S27). The control section 41 creates the mail for notifying a user of a processing result based on the processing result (S28), and ends processing. The control section 41 performs demand issue processing as mentioned above. After a demand issue processing end, to the translation processing section 43, the control section 41 requests creation of the mail for notifying a processing result, and transmits the created mail to a user.
[0041] Next, the above-mentioned translation manipulation routine is explained using the flow chart of drawing 10 . A translation manipulation routine is performed in the translation processing section 43. As mentioned above, two or more translation processing sections 43 exist for every language, and are chosen by the control section 41 corresponding to a user's used language (value of a user's root domain), and a user's habitation area (value of an affiliation domain).
[0042] a translation manipulation routine -- the translation processing section 43 -- first -- "out of the text under mail -- " and "-- a sentence is extracted by making ", a new-line code, etc. into a delimiter (S41)
[0043] The translation processing section 43 performs matching with the word or phrase registered into the word in the sentence or the phrase, and the user's dictionary 53, after extracting a sentence (S42). That is, it searches whether there is any same word or same phrase as the word or phrase stored in the field of "natural language" of a user's dictionary 53. When the word or phrase which corresponds in a user's dictionary 53 in a sentence is not searched, next with reference to the domain dictionary 51, it searches similarly. As a result of reference, in a sentence, when the word registered into the user's dictionary 53 and the domain dictionary 51 is not searched, the reply mail which tells that is created as (S43) and a translation being impossible (S51), and processing is ended.
[0044] As a result of reference, when only one meaning of a passage is acquired, the dictionary of the direction referred to for the meaning of a passage in (S44), the domain dictionary 51, or a user's

dictionary 53 is updated (S48). That is, "the operating frequency" of the data applicable to the searched meaning of a passage is made to increase. Then, it notifies to the control section 41 by making the acquired meaning of a passage into a translation result (S49), and processing is ended. As a result of reference, when two or more meaning of a passage is acquired, according to the rule 1 or rule 2 shown in (S44) and the following, one of two or more meaning of a passage is chosen.

[0045] Rule 1: Choose the word or phrase with much combination of a mold of a command among the word which matched, or a phrase.

Rule 2: The score of each word or a phrase is computed and choose what has the highest score from which other words or a difference with the score of a phrase becomes beyond a predetermined value.

[0046] the time of two or more meaning of a passage being acquired -- (S44) -- meaning of a passage is first specified by the rule 1 (S45) When it cannot specify by the rule 1, meaning of a passage is specified by (S46) and the rule 2 (S47). Also by the rule 2, when meaning of a passage cannot be specified, (S48) translation impossible notice mail is created (S51). An example is shown below and the specific method of the meaning of a passage in a rule 1 and a rule 2 is explained to it.

[0047] For example, the time of the sentence "turn ON air conditioning" being extracted from the description in reception mail is considered. At this time, the word "air conditioning" and "air conditioning ON" matches in the field of the "natural language" in the domain dictionary 51 shown in drawing 4 . At this time, the mold of "air conditioning" is "O" showing an operand, and the mold of "air conditioning ON" is "CO" showing the combination of a command and an operand. For this reason, according to a rule 1, the "air conditioning ON" with much combination of a mold is chosen, and let "ON, 2 F-PAC -1" which are the intermediate language corresponding to this be a translation result. Here, "ON" of intermediate language is a command which puts into operation the device specified with an operand, and "2 F-PAC -1" expresses the operand which shows air-conditioning equipment, such as an air-conditioner in a specific place.

[0048] Moreover, the case where the following two sentences are extracted out of mail is considered.

(-- 1) "please turn ON air-conditioning."

(-- 2) "Air-conditioning OFF"

[0049] In this case, in the domain dictionary 51 shown in drawing 4 , by the sentence (1), "air-conditioning and ON" match, in a sentence (2), "air-conditioning and OFF" match and two meaning-of-a-passage candidates are obtained. Both the molds of these commands serve as "CO", and since it is the same, they cannot be specified with a rule 1. Therefore, based on a rule 2, it is necessary to compute each score and to determine any are chosen from the score difference.

[0050] Calculation of a score is computed by adding what integrated the weight of minus to the number of the word with which the operating frequency of the word was matched in the sentence, or words other than a phrase. Here, as shown in drawing 4 , each operating frequency is 20, and in a sentence (1), since there are seven words other than "air-conditioning" and "ON", if weight of minus is set to 1, the score of minus will be set to 7. In a sentence (2), since there are no words other than "air-conditioning" and "ON", the score of minus is set to 0. The score of the meaning-of-a-passage candidate of a sentence (1) is set to 20-7=13, and the score of the meaning-of-a-passage candidate of a sentence (2) is set to 20-0=20. Therefore, the score difference of both sentences is set to 7.

[0051] This score difference and reference value are compared. A score difference chooses the higher one of a score as a translation result beyond a reference value at a certain time. It checks which demand is performed to a user by transmitting check mail noting that it cannot decide with which meaning-of-a-passage candidate, when this score difference is less than a reference value. When a reference value is set to 5, since a score difference is 7, a sentence (2) is specified in this case.

[0052] When there are two or more meaning-of-a-passage candidates as mentioned above, according to a rule 1 or a rule 2, it is specified as one meaning of a passage. When meaning of a passage is specified, the value of the selected word or "the operating frequency" of a phrase is made to increase in the user's dictionary 53 or the domain dictionary 51 referred to for the word or phrase (S49). By making this operating frequency increase, the past operating experience is learned and what has the past high operating frequency becomes that it is easy to be chosen at the time of subsequent selections (at the time

of score calculation). A translation result is notified to the command-processing section 45 after renewal of user's dictionary or domain dictionary 51 (S50), and a translation manipulation routine is ended.
[0053] Next, the above-mentioned study manipulation routine is explained. As mentioned above, in the building-management system 11, when the sentence described by the mail transmitted by the user is not registered into a user's dictionary 53 or the domain dictionary 51 and cannot translate, or when two or more meaning of a passage cannot be specified since it is the sentence of an ambiguous expression, the check mail for checking meaning of a passage again is transmitted to a user. After receiving the reply mail to this check mail, when processing is decided by translating this, a user has the learning function which registers into a user's dictionary 53 automatically expression described by the mail transmitted first as a new translation. The study manipulation routine which realizes such a learning function is explained using the flow chart of drawing 11 .
[0054] In a study manipulation routine, the translation processing section 43 performs translation processing shown with the flow chart of drawing 10 (S61). Next, when a translation result is judged (S62) and it translates correctly (i.e., when it translates into intermediate language uniquely), expression of the natural language described by check mail of the origin which receives the received reply mail is related with intermediate language, and is newly registered into a user's dictionary 53 (S63). Thus, when it learns by registering an expression peculiar to a user into a user's dictionary 53 and the processing demand by the same expression is made from the same user after that, a translation becomes possible, without checking to a user. When reception mail is not translated correctly, it does not process and a study manipulation routine is ended.
[0055] Next, a command-processing routine is explained. A command-processing routine is performed by the command-processing section 45, and is outputted to the CC section 33 by considering intermediate language transmitted from the control section 41 as an instruction. At this time, the control section 41 controls the output method for the CC section 33 of intermediate language based on the predetermined processing type according to intermediate language. When two or more conflicting requirements are made by specifying a processing type according to intermediate language as mentioned above, it will check, if a setting user or a manager has the need, and judges to which demand processing priority is given. There are five types as shown below among these processing types.
[0056] (a) In an exclusion type exclusion type, when there is an effective prior setup to a certain device, change by other users cannot be performed. When the processing demand by this type of intermediate language is made, if the manager is set as the rule set with the user who performed the demand, and the user who performed the present setup, the notice mail which notifies the manager of the purport which newly had a processing demand will be transmitted.
[0057] (b) In a shared type share type, even when there is an effective prior setup to a certain device, change by other users can be performed. That is, the processing demand newest in the time becomes effective. When the processing demand by this type of intermediate language is made, if the manager is set as the rule set with the user who performed the processing demand, and the user who performed the present setup, the notice mail which notifies the purport into which the processing demand was changed by the manager will be transmitted.
[0058] (c) In the granted type permission type of a permission, there is an effective prior setup by the user who has received a certain device, and if the manager is set as the rule set with the user who performed the present setup when the demand of setting change is performed by other users, the check mail for obtaining permission, respectively will be transmitted to the manager. A setup is changed when "permission" is obtained with the reply mail from a manager specified to be the user who performed a setup effective now after the check mail transmission and in a predetermined time, or a rule set. A setup is not changed when "permission" is not able to be obtained in a predetermined time. Moreover, the demand by which the inside of the predetermined time which waits for reception of reply mail was newly made is suspended after check mail transmission.
[0059] (d) In a refused type refusal type, if the manager is set as the rule set with the user who performed the present setup when there is an effective prior setup by a certain user and the demand of setting change is performed by other users to a certain device, the check mail for checking "refusal" will

be transmitted to the manager. A demand is refused when "refusal" is obtained with the reply mail from a manager specified to be the user who performed a setup effective now after the check mail transmission and in a predetermined time, or a rule set. A new demand becomes effective when the reply mail which decides "refusal" is not answered. Moreover, the demand by which the inside of a predetermined time until it receives reply mail was newly made is suspended after check mail transmission.

[0060] (e) In a checked type check type, there is an effective prior setup by the user who has received a certain device, and when the demand of setting change is performed by other users, transmit check mail to the user who performed the demand. When the demand is checked by the reply mail transmitted by the user, the newly made demand is set up.

[0061] The information processing type [above] is stored in the "type" in the rule set 55. That is, in the command-processing section 45, the "user", the "command", and the "operand" which were transmitted from the control section 41 are searched as a key, and a processing type is determined from the field of "type" of the corresponding data.

[0062] The flow chart of drawing 12 is used for below, and operation of a command-processing routine is explained to it. In a command-processing routine, first, the command-processing section 45 uses the user address, intermediate language, and an operand as a search key, the rule set 55 is searched, and the processing type to the intermediate language is recognized (S81). Next, a processing type is judged (S82), and when a processing type is an "exclusion type", a processing type is a "shared type" at Step S83, a processing type is "the granted type of a permission" at Step S84 and a processing type is a "refused type" at Step S85, when a processing type is a "checked type", it progresses to Step S87 in Step S86.

[0063] In exclusion type processing (S83), the command-processing section 45 operates in the procedure shown in the flow chart of drawing 13 . In drawing 13 , the command-processing section 45 checks first whether the same processing demand is set up in advance with reference to historical data 59 (S101). When the same processing demand is already set up, (S102) and processing are ended. When not set up, by outputting intermediate language to (S102) and the CC section 33, processing of the demand from a user is requested (S103), and history information, such as a user name, the set-up contents of processing, the setup time, and a processing result, is registered into historical data 59 (S104). Then, a processing result is notified to the control section 41 (S105).

[0064] In shared type processing (S84), the command-processing section 45 operates in the procedure shown in the flow chart of drawing 14 . In drawing 14 , the command-processing section 45 requests execution of the demand processing from a user by outputting intermediate language to the CC section 33 (S121). Then, the history information on the processing performed by historical data 59 is registered and carried out (S122), and a processing result is outputted to the control section 41 (S123).

[0065] In the granted type processing (S85) of a permission, the command-processing section 45 operates in the procedure shown in the flow chart of drawing 15 . First, the command-processing section 45 judges whether the mail under present processing is reply mail to the check mail transmitted in advance in order to obtain permission (S141). When the mail under present processing is not reply mail, it judges whether the processing demand which already corresponds is set up (S142). When the already set-up processing demand exists, the demand processing is recorded on (S142) and the hold data 57 as hold demand processing (S143). Next, a processing result is outputted to the control section 41 so that the check mail for obtaining permission to the manager of the user who performed a setup effective now, or the device specified in user information may be transmitted (S144). When the corresponding processing is not set up, by outputting intermediate language to (S142) and the CC section 33, execution of the processing demand from a user is requested (S145), and historical data 59 are updated (S146). Then, a processing result is outputted to the control section 41 (S147).

[0066] When the mail under present processing is reply mail, (S141) and the command-processing section 45 judge whether the processing demand was permitted (S148). When a permission is granted, execution of the processing demand suspended into (S148) and the hold data 57 is requested by outputting intermediate language to the CC section 33 (S149), and historical data 59 are updated (S150).

Then, the hold demand processed data to which it corresponds in the hold data 57 are deleted (S151), a processing result is outputted to the control section 41 (S152), and processing is ended. A processing result is outputted to the control section 41 so that the mail which deletes the hold demand processed data to which it corresponds in (S148) and the hold data 57 when a permission is not granted (S151), and notifies the purport which was not permitted may be created (S152), and processing is ended.
[0067] In refused type processing (S86), the command-processing section 45 operates according to the procedure shown in the flow chart of drawing 16 . In drawing 16 , the command-processing section 45 judges whether it is reply mail to the check mail transmitted in advance, in order that the mail under present processing may check refusal (S161). When the mail under present processing is not the reply mail, it judges whether (S161) and the processing which already corresponds are set up (S162). When the processing which already corresponds is set up, the processing demand is recorded on (S162) and the hold data 57 as hold demand processing (S163), and a processing result is outputted to the control section 41 so that mail may be transmitted to the manager of the user who performed a setup effective now, or the device specified in user information (S164). When the corresponding processing is not set up, by outputting intermediate language to (S162) and the CC section 33, execution of the processing demand from a user is requested (S165), historical data 59 are updated (S166), a processing result is outputted to the control section 41 (S167), and processing is ended.
[0068] When the mail under present processing is reply mail, it is judged whether (S161) and its processing demand were refused (S168). When not refused, execution of the processing demand suspended into (S168) and the hold data 57 is requested by outputting intermediate language to the CC section 33 (S169), and historical data 59 are updated (S170). Then, the hold demand processed data in the hold data 57 are deleted (S171), a processing result is outputted to the control section 41 (S172), and processing is ended. When refused, the hold demand processed data in (S168) and the hold data 57 are deleted (S171), a processing result is outputted to the control section 41 (S172), and processing is ended.

[0069] In checked type processing (S87), the command-processing section 45 operates according to the flow chart of drawing 17 . In drawing 17 , it judges whether the command-processing section 45 is reply mail to the check mail with which the mail under present processing was transmitted in advance (S180). When the mail under present processing is not reply mail, the demand processing is recorded as hold demand processing at (S180) and the hold data 57 (S181), and a processing result is outputted to the control section 41 so that mail may be transmitted to the manager of the device specified in the user information 49 (S182). When the mail under present processing is reply mail, (S180) and historical data 59 are updated (S183), execution of the processing demand from a user is requested by outputting intermediate language to the CC section 33 (S184), the corresponding hold demand processed data which were recorded into the hold data 57 are deleted (S185), a processing result is outputted (S186), and processing is ended.
[0070] Thus, in the command-processing section 45 of this operation form, the output of the intermediate language to the CC section is controlled according to the published processing type of intermediate language. That is, when the same processing demand is made, based on a processing type, processing to the CC section is performed automatically, or processing to the CC section is requested after a check about a processing demand to be checked. When the processing to which plurality is contradictory with a user is required by this, based on a predetermined procedure, processing can be completed without conflict.
[0071] As mentioned above, although operation of the building-management system of this operation gestalt was explained, an exchange of the mail in the building-management system of this operation gestalt is concretely shown using drawing 18 below.
[0072] If the mail shown in drawing 18 (a) is transmitted from a user (satoh) to a building-management system (BAS), after the justification and the used language of the user address (satoh) are checked, in the control section 41, a translation will be performed as mentioned above. In the translation processing section, first, "Lighting ON" is specified as a sentence and matching with the word in this sentence or a phrase, and the word registered into the user's dictionary 53 or the domain dictionary 51 is performed.

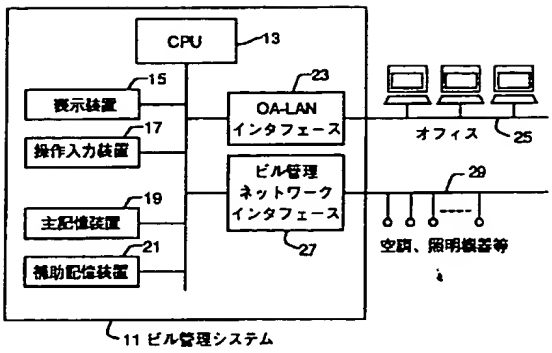
[0073] Here, since the word "lighting" is registered into the domain dictionary 51 as shown in drawing 4 , the word this "lighting" is searched by matching. However, from a word "lighting", since it specifies which device is made into a processing object in the translation processing section 43 since two meaning-of-a-passage candidates, "2 F-LA" and "2 F-LB", are obtained, check mail as shown in drawing 18 (b) is created, and it is transmitted to a user. If the reply mail which tells the purport which chooses the "candidate 1" as shown in drawing 18 (c) from a user is answered, in the translation processing section 43, based on reply mail of drawing 18 (c), a processing object will be decided and the intermediate language based on the demand from a user will be generated. At this time, the translation processing section 43 is learned by relating the word "Lighting ON" with the intermediate language "ON, 2 F-LA", and registering with a user's dictionary 53 according to the contents of the reply mail shown in drawing 18 (c). It can translate into intermediate language, without checking to a user, when the mail "Lighting ON" is transmitted from the same user after that by this.
[0074] The control section 41 transmits this translated intermediate language to the command-processing section 45. The command-processing section 45 checks the processing type of this intermediate language. If the rule set shown in drawing 6 is referred to, since the processing type in this case is "S" showing a shared type, it will become effective newest requiring it. For this reason, the command-processing section 45 outputs intermediate language to the CC section 33, without checking setting change to a prior user. The CC section 33 turns on the lighting device specified according to this intermediate language. After processing by the CC section 33 is completed, the command-processing section 45 notifies a processing result to the control section 41, and the control section 41 transmits notice mail of a processing result like drawing 18 (d) to a user, and ends processing.
[0075] Based on the contents of the E-mail transmitted by the user, information offer of control of operation of the device in a building, a setup of a schedule, a setup of the present condition of a schedule, an environmental parameter, etc. can be performed [in / the building-management system of this operation form / as mentioned above]. Since the translation processing section is set up for every habitation area of every language which a user uses, and a user at this time, the device which the translation of according to the language which a user uses is attained, and serves as a controlled system according to a user's affiliation area can be specified automatically. Furthermore, when performing the demand from a user and there is a conflicting requirement from two or more users since the processing type is set up according to the contents of the demand, processing can be completed without conflict with a predetermined procedure.
[0076]
[Effect of the Invention] In the 1st building-management system concerning this invention, a user can demand the operation control of the device in a building, a setup of a schedule, etc. from a building-management system by the E-mail.
[0077] In the 1st building-management system of desirable composition, in order to control the output method to a CC means by the predetermined rule according to intermediate language, when the processing demand to which plurality is contradictory is made, check work is made if needed automatically and judgment of the execution/halt of processing to a demand can be determined.
[0078] In the 1st building-management system of desirable composition, since it has a dictionary means, the conversion or its reverse conversion to intermediate language from natural language can be performed.
[0079] In the 1st building-management system of desirable composition, conversion to intermediate language can be performed also in the case of the E-mail described by different language by setting up a dictionary means for every language.
[0080] In the 1st building-management system of desirable composition, the dictionary means is set up for every predetermined field in a building, and since the dictionary means of a predetermined field according to a user's affiliation field is chosen, the device of the range by which a user resides is chosen automatically. Thereby, it can prevent controlling the device of the habitation range of other users accidentally.
[0081] In the 1st building-management system of desirable composition, since a translation processing

means has a learning function, in subsequent transform processing, the processing time can be shortened by being able to register an expression peculiar to a user automatically, and updating automatically also about a word or the operating frequency of a phrase.

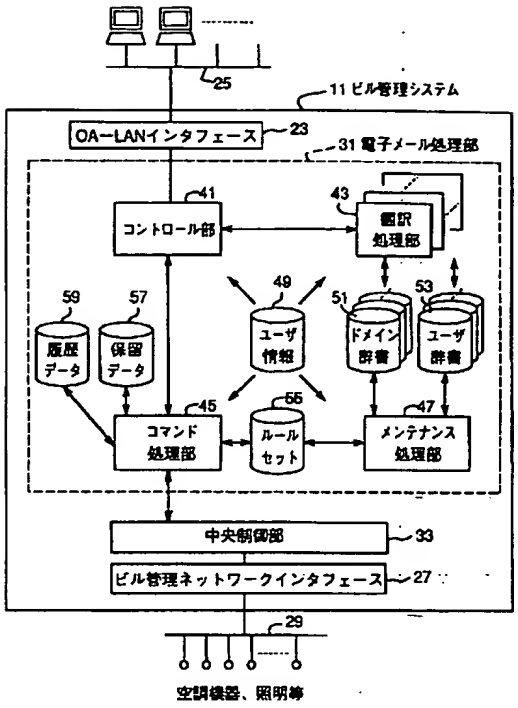
[0082] According to the 2nd building-management system concerning this invention, predetermined information, such as operational status of the device in a building and the set point, can be offered by the E-mail to a user.

[Translation done.]

【図1】



【図2】



【図3】

ユーザ情報

ユーザアドレス	ユーザ名	ルートドメイン	所属ドメイン	優先度
Satoh	佐藤	Japanese	2F-E	1
Yamada	山田	Japanese	2F-W	1
…	…	…	…	…

【図4】

ドメイン辞書

自然言語	型	中間言語	使用頻度
空調,ON	CO	ON,2F-PAC-1	20
空調,OFF	CO	OFF,2F-PAC-1	20
照明	O	2F-LA	1
照明	O	2F-LB	1
冷房	O	2F-PAC-1	1
冷房,ON	CO	ON,2F-PAC-1	1
…	…	…	…

【図5】

ユーザ辞書

自然言語	型	中間言語	使用頻度
照明,OFF	CO	OFF,2F-LA	1
あついよ	CO	ON,2F-PAC-1	1
…	…	…	…

【図6】

ルールセット

ユーザ	コマンド	オペランド	型	管理者
Satoh	ON	2F-PAC-1	S	Toyoda
Satoh	ON	2F-LA	S	Toyoda
Satoh	ON	2F-LB	S	Toyoda
Yamada	OFF	2F-PAC-1	E	Toyoda
…	…	…	…	…

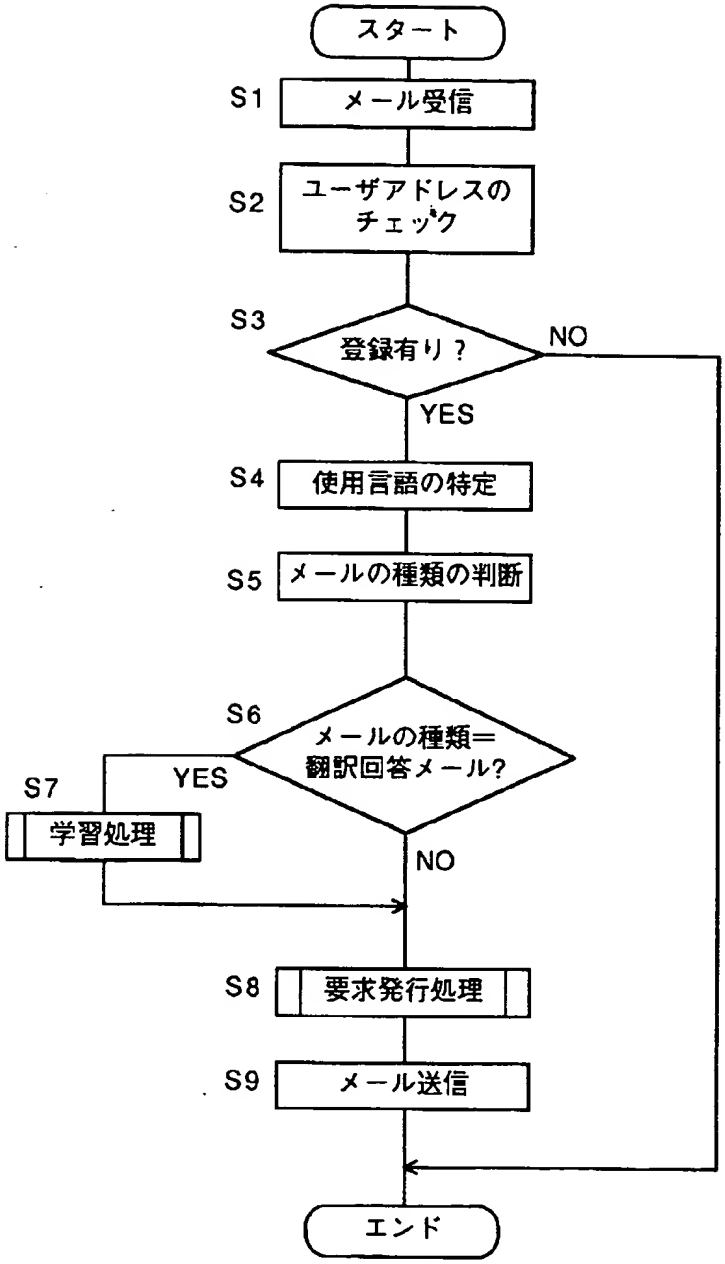
【図8】

(a)
Message_ID : <9606120000. AA12345@HOST. DOMAIM>
Date : Wed, 12, Jun 1996 09:00:00+0900
From : BAS
To : User
Subject : [BAS0001]

(b)
Message_ID : <9606120005. AA00001@HOST. DOMAIM>
Date : Wed, 12, Jun 1996 09:05:00+0900
From : User
To : BAS
Subject : Re : [BAS0001]
In-Reply-To<9606120000. AA12345@HOST. DOMAIN>

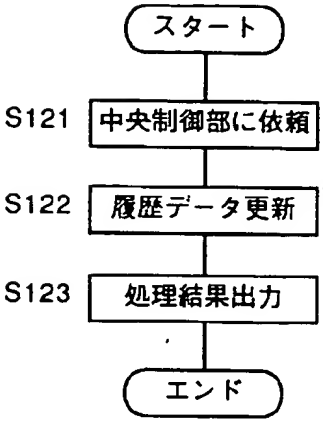
【図7】

メイン

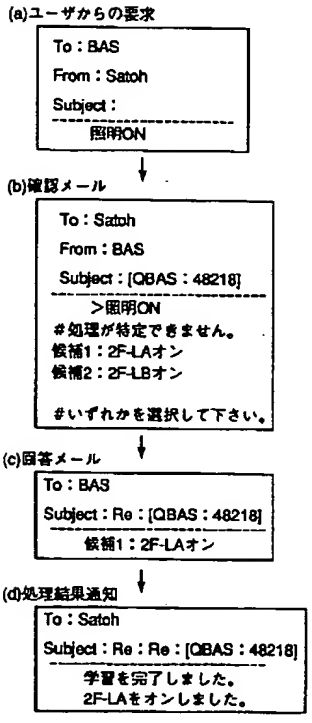


【図14】

共有型処理

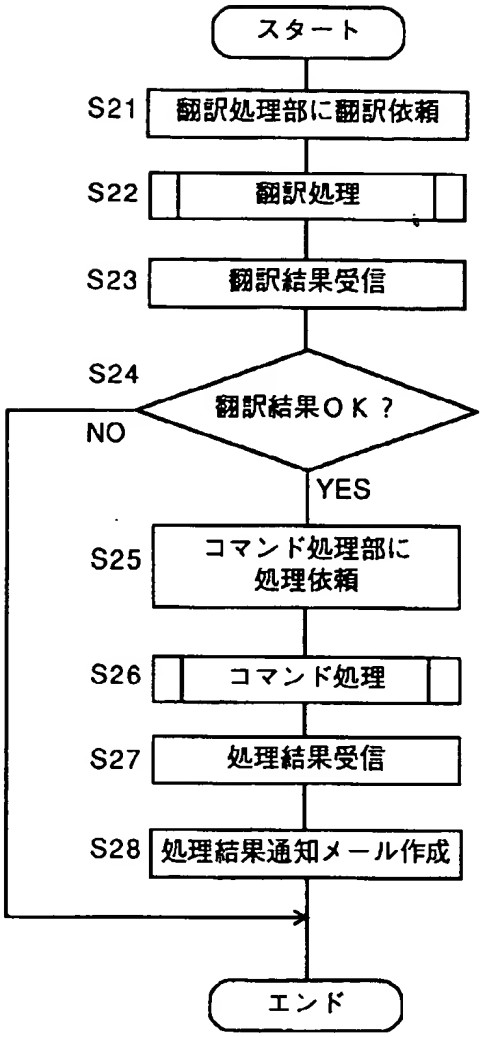


【図18】



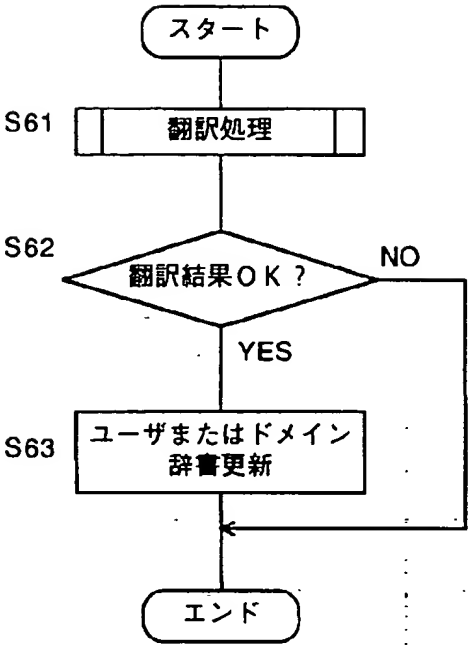
【図9】

要求発行処理



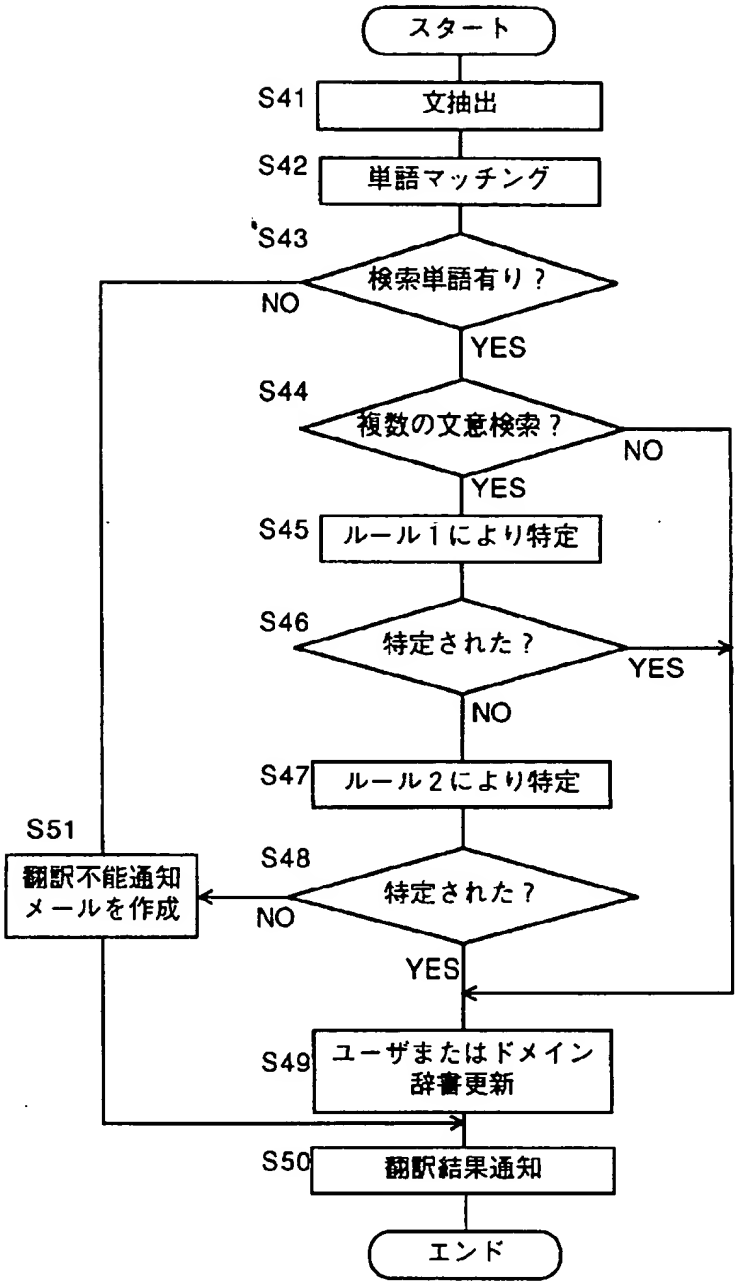
【図11】

学習処理



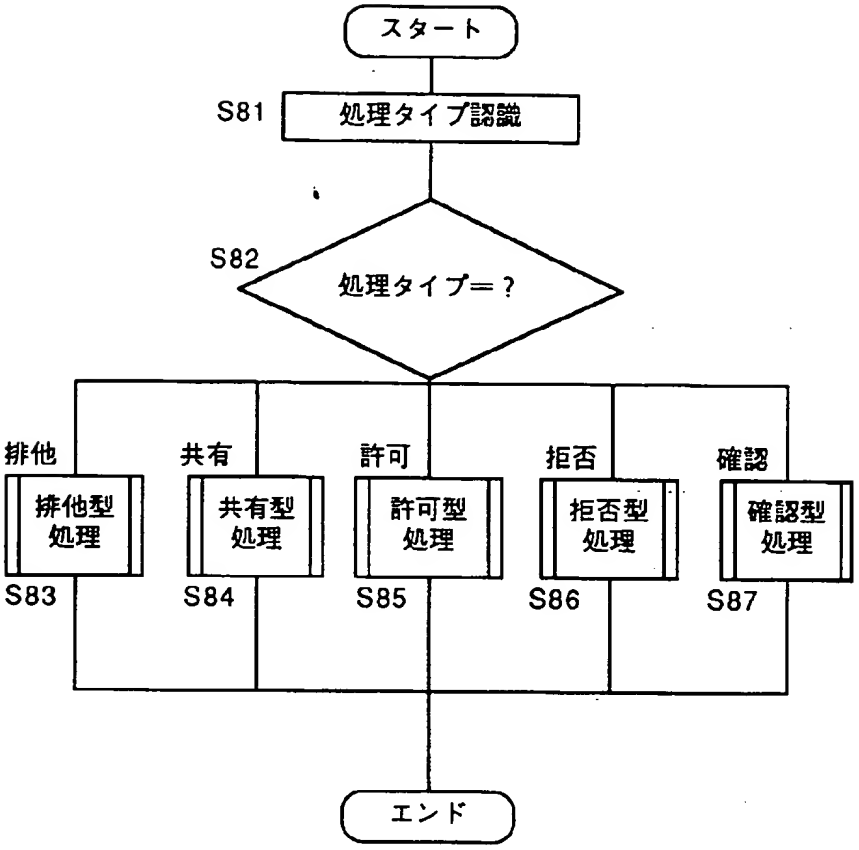
【図10】

翻訳処理

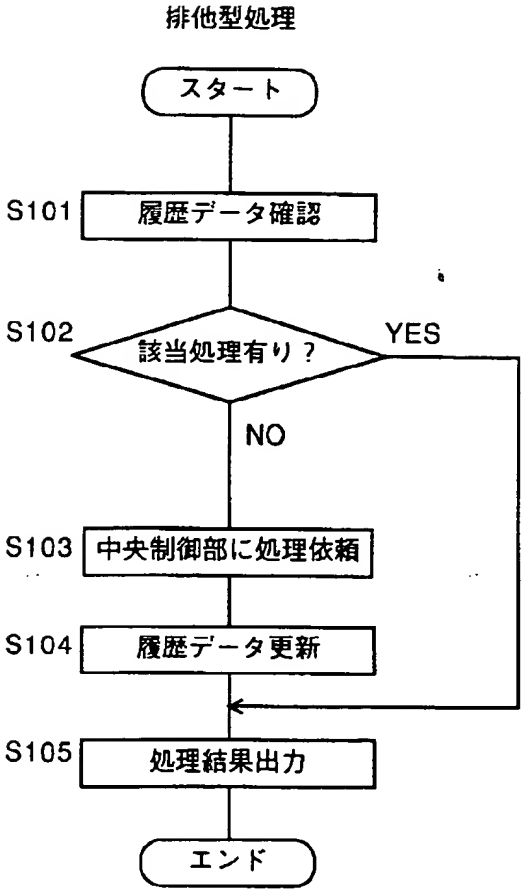

スタート
S41
文抽出
S42
単語マッチング
S43
検索単語有り？
NO
YES
S44
複数の文意検索？
NO
YES
S45
ルール1により特定
S46
特定された？
YES
NO
S47
ルール2により特定
S51
翻訳不能通知
メールを作成
S48
特定された？
NO
YES
S49
ユーザまたはドメイン
辞書更新
S50
翻訳結果通知
エンド

【図12】

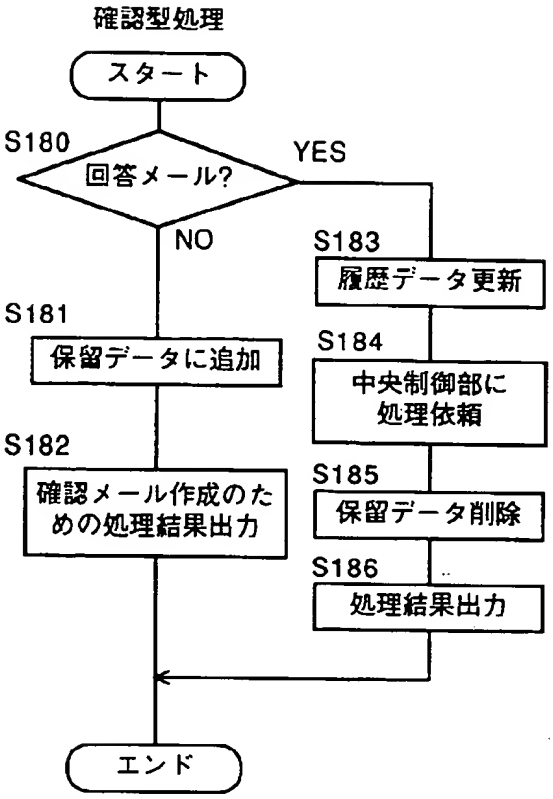
コマンド処理


スタート
S81
処理タイプ認識
S82
処理タイプ=?
排他
共有
許可
拒否
確認
排他型処理
共有型処理
許可型処理
拒否型処理
確認型処理
S83
S84
S85
S86
S87
エンド

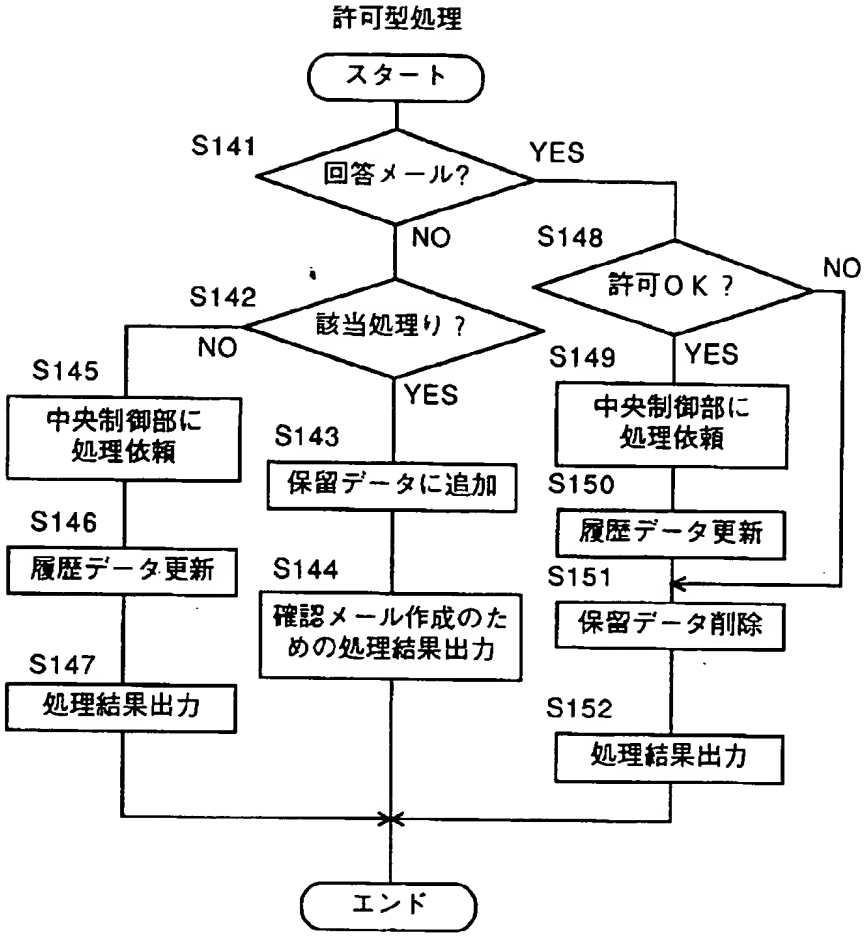
【図13】


排他型処理
スタート
S101
履歴データ確認
S102
該当処理有り？
YES
NO
S103
中央制御部に処理依頼
S104
履歴データ更新
S105
処理結果出力
エンド

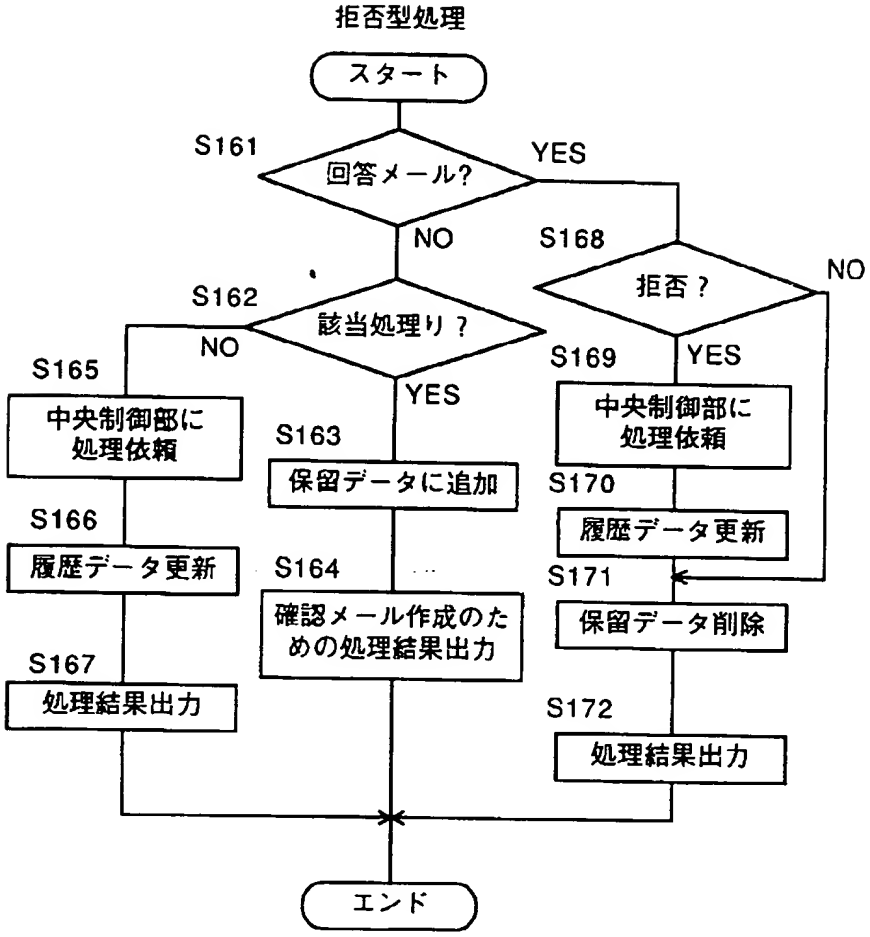
【図17】


確認型処理
スタート
S180
回答メール?
YES
NO
S183
履歴データ更新
S181
保留データに追加
S184
中央制御部に
処理依頼
S182
確認メール作成のた
めの処理結果出力
S185
保留データ削除
S186
処理結果出力
エンド

【図15】


許可型処理
スタート
S141
回答メール?
YES
NO
S148
許可ＯＫ？
NO
S142
該当処理り？
NO
YES
S149
YES
S145
中央制御部に
処理依頼
S143
保留データに追加
中央制御部に
処理依頼
S150
履歴データ更新
S146
履歴データ更新
S144
確認メール作成のた
めの処理結果出力
S151
保留データ削除
S147
処理結果出力
S152
処理結果出力
エンド

【図16】


拒否型処理
スタート
S161
回答メール?
YES
NO
S168
拒否?
NO
S162
該当処理り?
NO
YES
S169
YES
S165
中央制御部に処理依頼
S163
保留データに追加
S170
中央制御部に処理依頼
履歴データ更新
S166
履歴データ更新
S164
確認メール作成のための処理結果出力
S171
保留データ削除
S167
処理結果出力
S172
処理結果出力
エンド

* NOTICES *

1. This document has been translated by computer.So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] As opposed to the device installed in the building through the network for building management In the building-management system which has a CC means to perform predetermined processing about building management, such as a setup of an operation control and an operation schedule, or collection of the predetermined information about the aforementioned device The building-management system characterized by having an E-mail processing means to output the instruction controlled for an E-mail to receive the processing demand from a user through the network for office, and to perform processing based on this processing demand to the aforementioned CC means.
[Claim 2] The aforementioned E-mail processing means is the building-management system carry out a bird clapper as the feature from a control means receive the aforementioned E-mail the aforementioned processing demand was described to be in a building-management system according to claim 1, a translation processing means translate to the intermediate language which can recognize [demand / processing / aforementioned / which was described by the aforementioned E-mail with natural language] in the aforementioned CC means, and a command-processing means carry out the translated aforementioned intermediate language as the aforementioned instruction, and output to the aforementioned CC means.
[Claim 3] It is the building-management system characterized by having a rule storing means to store the rule which controls the output method in case the aforementioned command-processing means outputs the aforementioned intermediate language to the aforementioned central-process means in a building-management system according to claim 2 according to the aforementioned intermediate language.
[Claim 4] It is the building-management system characterized by having a dictionary means for the aforementioned translation processing means to associate the aforementioned natural language and the aforementioned intermediate language in a building-management system according to claim 2, and to memorize.
[Claim 5] It is the building-management system characterized by being chosen according to the language which the aforementioned dictionary means is set up for every language in the building-management system according to claim 4, and the aforementioned user uses.
[Claim 6] It is the building-management system characterized by being chosen according to the field to which it sets to a building-management system according to claim 4, the aforementioned dictionary means is set for every predetermined field in a building, and the aforementioned user belongs.
[Claim 7] It is the building-management system characterized by the aforementioned translation processing means having a learning function in building-management equipment according to claim 4.
[Claim 8] The building-management system characterized by to have an E-mail processing means notify a user of the predetermined information collected by the aforementioned CC means by the E-mail through the network for office in the building-management system which has a CC means to collect the predetermined information in buildings, such as a state of the device installed in the building, the set point, or temperature/humidity, through the network for building management.
[Claim 9] It is the building-management system characterized by the bird clapper from a command-

processing means to by_which the aforementioned E-mail processing means receives the aforementioned predetermined information from the aforementioned CC means in a building-management system according to claim 8, a translation processing means translate the predetermined information on the aforementioned CC means into natural language, and a control means transmit the translation result by the aforementioned translation processing means to the aforementioned user by the aforementioned E-mail.

[Translation done.]